CURRICULUM -2020
(C-20)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING
ANDHRA PRADESH :: VIJAYAWADA

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

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INDEX

PREAMBLE

The proposed programme intends to develop a skilled technician to support the industries both nationally or globally. It also helps to kindle the spirit of entrepreneurship with necessary skills and theoretical inputs aligning with the National policy of 'Make in India'. The programme also provides for accomplishing higher education goals for those who wish to enrich their theoretical concepts further.

The State Board of Technical Education and Training, (SBTET) AP, has been offering Diploma programmes to meet the above said aspirations of the stake holders: industries, students, academia, parents and the society at large. As such, it has been the practice of SBTET, A.P., to keep the curriculum abreast with the advances in technology through systematic and scientific analysis of current curriculum and bring out an updated revised version at regular intervals. Accordingly the SBTET, AP under the aegis of the Department of Technical Education, Andhra Pradesh in it's 57th Board Meeting held on 05-02-2019 (vide item no: 18) resolved to update the Polytechnic Curriculum C-16 with the guidance of National Institute of Technical Teachers Training & Research (NITTTR), Extension Centre, Vijayawada (ECV), to be implemented with effect from the academic year '20-21.

Analysis of Curriculum C-16 (SWOT analysis) started in the month of June-2019. Feedback was collected from all stake holders: Students, Lecturers, Senior Lecturers, Head of Sections and Principals for all programmes for this purpose. A series of workshops with subject experts followed in the subsequent weeks and the draft curricula were prepared for every programme. Finally, an interactive session with representatives from industries, academia and subject experts was held on 04.01.2020 for thorough perusal and critique of draft curricula; and the suggestions received thus received from Industrialists and academia have been recorded , validated by another set of experienced subject teachers from the Department of Technical education for incorporation into the Curriculum C-20.

The design of new Curricula for the different diploma programmes has thus been finalised with the active participation of the members of the faculty teaching in the Polytechnics of Andhra Pradesh, and duly reviewed by Expert Committee constituted of academicians and representatives from industries. Thus, the primary objective of the curriculum change is to produce employable technicians in the country by correlating the growing needs of the industries with relevant academic input.

The outcome based approach as given by NBA guidelines has been followed throughout the design of this curriculum is designed to meet the requirements of NBA Accreditation, too. The revised New Curriculum i.e., Curriculum–2020 (C-20) is approved by BoG of SBTET for its implementation with effect from 2020-21.

Highlights of Curriculum C-20:

1. Duration of course for regular Diploma and for sandwich Diploma is 3 years and 3½ years respectively.
2. The Curriculum is prepared in Semester Pattern. However, First Year is maintained as Year-wise pattern.
3. 6 Months Industrial training has been introduced for 3 years Diploma Courses and 1 year Industrial Training is introduced for 3 ½ years Sandwich Diploma courses.
4. Updated subjects relevant to the industry are introduced in all the Diploma courses.
5. CISCO course content has been incorporated into the ECE and CME programmes for certification from CISCO in lieu of industrial training when students are unable to get Industrial Training placement in any industry.
6. The policy decisions taken at the State and 1Central level with regard to environmental science are implemented by including relevant topics in Chemistry. This is also in accordance with the Supreme Court guidelines issued in Sri Mehta's case.
7. Keeping in view the increased need of communication skills which is playing a major role in the success of Diploma Level students in the Industries, emphasis is given for learning and acquiring listening, speaking, reading and writing skills in English. Further as emphasized in the meetings, Communication Skills lab and Life Skills lab are continuing for all the branches.
8. CAD specific to the branch has been given emphasis in the curriculum. Preparing drawings using CAD software has been given more importance.
9. Upon reviewing the existing C-16 curriculum, it is found that the theory content is found to have more weightage than the Practical content. In C-20 curriculum, more emphasis is given to the practical content in Laboratories and Workshops, thus strengthening the practical skills.
10. With increased emphasis for the student to acquire Practical skills, the course content in all the subjects is thoroughly reviewed and structured as outcome based than the conventional procedure based.
11. Curricula of Laboratory and Workshops have been thoroughly revised based on the suggestions received from the industry and faculty, for better utilization of the equipment available in the Polytechnics. The experiments /exercises that are chosen for the practical sessions are identified to confirm to the field requirements of industry.
12. An exclusive section for assessing Higher order Thinking skills (HOTS) has been introduced in summative evaluation.

Acknowledgements:

It is pertinent to acknowledge the support of the following in the making of Curriculum C-20.

A series of workshops in three phases were conducted by NITTTR, AP Extension Centre, Vijayawada involving faculty from Polytechnics, Premier Engineering Colleges & Industries to analyze the Previous C-16 Curriculum and to design C-20 Curriculum under the guidance of **Dr C. R. Nagendra Rao, Professor & Head, NITTTR-ECV**. The efforts & support extended by NITTTR to bring out final Curriculum C-20 by incorporating needs, aspiration & expectations of all stake holders is highly appreciated and gratefully acknowledged.

The Secretary, SBTET AP extends its gratitude and congratulate all the staff members who are involved and the subject experts of various branches who have contributed their services in designing this C-20 curriculum book.

The Secretary, SBTET AP is very much thankful to **Dr. Pola Bhaskar I.A.S., Commissioner of Technical Education & Chairman,SBTET, AP** for his valuable guidance to bring out this curriculum book.

The Secretary, SBTET AP is grateful to **Sri M.M. Nayak, I.A.S.,** the then **Special Commissioner of Technical Education & Chairman,SBTET, AP**. for their guidance and valuable inputs during process of revising, modifying, updating and bring it for implementing the Curriculum C-20 from 2020-21 academic year.

The Secretary, SBTET AP acknowledge with thanks the guidance & inspiration provided by **Sri. V.S. Dutt,** the then **Secretary, SBTET, Andhra Pradesh,** and other officials of State Board of Technical Education, Andhra Pradesh, experts from industry, academia from the Universities and higher learning institutions and all teaching fraternity from the Polytechnics who are directly or indirectly involved in preparation of the curriculum.

K.VIJAYA BHASKAR
Secretary (FAC)
SBTET AP

RULES AND REGULATIONS OF C-20 CURRICULUM

1. DURATION AND PATTERN OF THE COURSES

All the Diploma programs run at various institutions are of AICTE approved 3 years or 3½ years duration of academic instruction.

All the Diploma courses are run on year wise pattern in the first year, and the remaining two or two & half years are run in the semester pattern. In respect of few courses like Diploma in Bio-Medical course, the training will be in the seventh semester. Run-through system is adopted for all the Diploma Courses, subject to eligibility conditions.

2. PROCEDURE FOR ADMISSION INTO THE DIPLOMA COURSES:

Selection of candidates is governed by the Rules and Regulations laid down in this regard from time to time.

a) Candidates who wish to seek admission in any of the Diploma courses will have to appear for the Common Entrance Test for admissions into Polytechnics (POLYCET) conducted by the State Board of Technical Education and Training, Andhra Pradesh, Vijayawada.

Only the candidates satisfying the following requirements will be eligible to appear for the Common Entrance Test for admissions into Polytechnics (POLYCET).

b) The candidates seeking admission should have appeared for S.S.C examination, conducted by the Board of Secondary Education, Andhra Pradesh or equivalent examination thereto, at the time of applying for the Common Entrance Test for admissions into Polytechnics (POLYCET). In case of candidates whose results of their Qualifying Examinations is pending, their selection shall be subject to production of proof of their passing the qualifying examination in one attempt or compartmentally at the time of admission.

c) Admissions are made based on the merit obtained in the Common Entrance Test (POLYCET) and the reservation rules stipulated by the Government of Andhra Pradesh from time to time.

d) For admission into the following Diploma Courses for which entry qualification is 10+2, candidates need not appear for POLYCET. A separate notification will be issued for admission into these courses.

i). D.HMCT ii).D. Pharmacy

3. MEDIUM OF INSTRUCTION

The medium of instruction and examination shall be English.

4. PERMANENT IDENTIFICATION NUMBER (PIN)

A cumulative / academic record is to be maintained of the Marks secured in sessional work and end examination of each year for determining the eligibility for promotion etc., A Permanent Identification Number (PIN) will be allotted to each admitted candidate to maintain academic records.

5. NUMBER OF WORKING DAYS PER SEMESTER / YEAR:

a) The Academic year for all the Courses shall be in accordance with the Academic Calendar.

b) The Working days in a week shall be from Monday to Saturday

c) There shall be 7 periods of 50 minutes duration each on all working days.

d) The minimum number of working days for each semester / year shall be 90 / 180 days excluding examination days. If this prescribed minimum is not achieved due

to any reason, special arrangements shall be made to conduct classes to complete the syllabus.

6. ELIGIBILITY (ATTENDANCE TO APPEAR FOR THE END EXAMINATION)

a) A candidate shall be permitted to appear for the end examination in all subjects, if he or she has attended a minimum of 75% of working days during the year/Semester.

b) Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or 1st year may be granted on medical grounds.

c) A stipulated fee shall be payable towards Condonation for shortage of attendance.

d) Candidates having less than 65% attendance shall be detained.

e) Students whose shortage of attendance is not condoned in any semester / 1st year and not paid the condonation fee in time are not eligible to take their end examination of that class and their admissions shall stand cancelled. They may seek re-admission for that semester / 1st year when offered in the next subsequent academic semester/year.

f) For INDUSTRIAL TRAINING:

i) During Industrial Training the candidate shall put in a minimum of 90% attendance.

ii) If the student fails to secure 90% attendance during industrial training, the student shall reappear for 6 months industrial training at his own expenses.

7. READMISSION

Readmission shall be granted to eligible candidates by the respective Principal/ Regional Joint Director.

a) (i) Within 15 days after commencement of class work in any semester (Except Industrial Training).

(ii) For Industrial Training: before commencement of the Industrial training.

b) Within 30 days after commencements of class work in any year (including D. Pharmacy course or first year course in Engineering and Non-Engineering Diploma streams).

Otherwise such cases shall not be considered for readmission for that semester / year and are advised to seek readmission in the next subsequent eligible academic year.

The percentage of attendance of the readmitted candidates shall be calculated from the first day of beginning of the regular class work for that year / Semester, as officially announced by CTE/SBTET but not from the day on which he/she has actually reported to the class work.

8. SCHEME OF Evaluation

a) First Year

THEORY Courses: Each Course carries Maximum marks of 80 with examination of 3 hours duration, along with internal assessment for Maximum of 20 marks. (Sessional marks). However, there are no minimum marks prescribed for sessional.

Laboratory Courses: There shall be 40 Marks for internal assessment i.e. sessional marks for each practical Course with an end examination of 3 hours duration carrying 60 marks. However, there are no minimum marks prescribed for sessionals.

b) III, IV, V, VI and VII Semesters:

THEORY Courses: End semester evaluation shall be of 3 hours duration and for a maximum of 80 marks.

Laboratory Courses: Each Course carry 60/30 marks of 3hours duration 40/20 sessional marks.

9. INTERNAL ASSESSMENT SCHEME

a) **Theory Courses**: Internal assessment shall be conducted for awarding sessional marks on the dates specified. **Three unit tests shall be conducted for I year students and two Unit Tests for semesters.**

Internal Assessment shall be of 90 minutes duration and for a maximum of 40 marks. For each test. The average of marks of all the test, reduced to 20 shall be taken as final sessional in any case.

b) **Practical Courses**:

(i) **Drawing Courses:**

The award of sessional marks for internal Assessment shall be as given in the following table

Distribution of Marks for the Internal Assessment Marks			
First Year (Total:40 Marks)		**Semesters (Total:40 Marks)**	
Max:20 Marks	Max:20 Marks	Max:20 Marks	Max:20 Marks
From the Average of THREE Unit Tests.	From the Average of Assessment of Regular Class work Exercises.	From the Average of TWO Unit Tests.	From the Average of Assessment of Regular Class work Exercises.

All Drawing exercises are to be filed in **serial order** and secured for further scrutiny by a competent authority

(ii) Laboratory Courses:

Student's performance in Laboratories / Workshop shall be assessed during the year/ semester of study for 40 marks in each practical Course.

Evaluation for Laboratory Courses, other than Drawing courses:

i. Instruction (teaching) in laboratory courses (except for the course on Drawing) here after shall be task/competency based as delineated in the Laboratory sheets, prepared by SBTET,AP & NITTTR- ECV and posted in SBTET website.

ii. Internal assessment for Laboratory shall be done on the basis of task/s performed by the student as delineated in the laboratory sheets, prepared by SBTET, AP & NITTTR- ECV and posted in AP, SBTET website.

iii. Question paper for End semester Evaluation shall also be task/s based and shall be prepared and distributed by SBTET as done in case of theory courses be prepared as per SBTET rules in vogue.

c) Internal assessment in Labs / workshops / Survey field work etc., during the course of study shall be done and sessional marks shall be awarded by the concerned Teacher.

d) For practical examinations, except in drawing, there shall be two examiners. External examiner shall be appointed by the Principal in consultation with respective Head of Section preferably choosing a qualified person from in the order of preference. i) Nearby Industry ii) Govt. / Semi Govt. organization like R & B, PWD, PR, Railways, BSNL, APSRTC,APSEB etc., iii) Govt. / University Engg. College. iv) HoDs from Govt.Polytechnic

Internal examiner shall be the person concerned with internal assessment as in

(c) above. The end examination shall be held along with all theory papers in respect of drawing.

e) Question Paper for Practical's: Question paper should cover (the experiments / exercise prescribed to test various) skills like handling, manipulating, testing, trouble shooting, repair, assembling and dismantling etc., from more than one experiment / exercise

f) Records pertaining to internal assessment marks of both theory and practical Courses are to be maintained for official inspection.

g) **In case of Diploma programs *having* Industrial Training, Internal Assessment and Summative Evaluation**, shall be done as illustrated in the following table:

Assessment no	**Upon completion of**	**By**	**Based on**	**Max Marks**
1	12 weeks	1.The faculty concerned (Guide) and 2. Training in charge (Mentor) of the industry	Learning outcomes as given in the scheme of assessment ,for Industrial Training	120
2	22 weeks			120
3. Final summative Evaluation	24 week	1.The faculty member concerned, 2.HoD concerned and 3.An external examiner	1.Demonstration of any one of the skills listed in learning outcomes	30
			2.Training Report	20
			3.Viva Voce	10
			TOTAL	**300**

10. MINIMUM PASS MARKS

THEORY EXAMINATION:

For passing a theory Course, a candidate has to secure a minimum of 35% in end examination and a combined minimum of 35% of both Sessional and end examination marks put together.

PRACTICAL EXAMINATION:

For passing a practical Course, a candidate has to secure a minimum of 50% in end examination and a combined minimum of 50% of both sessional and practical end examination marks put together. In case of D.C.C.P., the pass mark for typewriting and short hand is 45% in the end examination. There are no sessional marks for typewriting and Shorthand Courses of D.C.C.P course.

INDUSTRIAL TRAINING:

a) Monitoring

Similar to project work each teacher may be assigned a batch of 10-15 students irrespective of the placement of the students to facilitate effective monitoring of students learning during industrial training.

b) Assessment

The Industrial training shall carry 300 marks and pass marks is 50% in assessments at industry (first and second assessment) and final summative

assessment at institution level put together i.e. 150 marks out of 300 marks. And also student has to secure 50% marks in final summative assessment at institution level.

11. PROVISION FOR IMPROVEMENT

Improvement is allowed only after he / she has completed all the Courses from First Year to Final semester of the Diploma.

a) Improvement is allowed in any 4 (Four) Courses of the Diploma.
b) The student can avail of this improvement chance **ONLY ONCE**, that too within the succeeding two examinations after the completion of Diploma. However, the duration including Improvement examination shall not exceed **FIVE** years from the year of first admission.
c) No improvement is allowed in Practical / Lab Courses or Project work or Industrial Training assessment. However, improvement in drawing Course(s) is allowed.
d) If improvement is not achieved, the marks obtained in previous Examinations hold good.
e) Improvement is not allowed in respect of the candidates who are punished under Mal-practice in any Examination.
f) Examination fee for improvement shall be paid as per the notification issued by State Board of Technical Education and Training from time to time.
g) All the candidates who wish to appear for improvement of performance shall deposit the original Marks Memos of all the years / Semesters and also original Diploma Certificate to the Board. If there is improvement in performance of the current examination, the revised Memorandum of marks and Original Diploma Certificate will be issued, else the submitted originals will be returned.

12. RULES OF PROMOTION FROM 1ST YEAR TO 3,^{rd,} 4,th 5th ,6th and 7th SEMESTERS:

A) For Diploma Courses of 3 Years duration

i. A candidate shall be permitted to appear for first year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.
ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the first year and pays the examination fee. A candidate who could not pay the first year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training, AP from time to time before commencement of 3rd semester.
iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate, who could not pay the 3rd semester exam fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training AP from time to time before commencement of 4th semester.

A candidate is eligible to appear for the 4th semester examination if he/she

a) Puts the required percentage of attendance in the 4th semester
b) Should not have failed in more than four Courses in 1st year

For IVC & ITI Lateral Entry Students:

a) A candidate is eligible to appear for the 4th semester examination if he/she puts the required percentage of attendance in the 4th semester
b) A candidate is eligible to appear for the 4th semester examination if he/she clears at least two Courses in third semester.

iv) A candidate shall be promoted to 5th semester provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

A candidate is eligible to appear for the 5th semester examination if he/she

a) Puts the required percentage of attendance in the 5th semester
b) Should get eligibility to appear for 4th Semester examination.

The first backlog exam in 5th semester will be conducted only in instant/supplementary diploma examination.

For IVC& ITI Lateral Entry students:

a) Puts the required percentage of attendance in the 5th semester

v) A candidate shall be sent to Industrial training provided he/she puts in the required percentage of attendance in the 4th semester and pay the examination fee/ promotion fee as prescribed by SBTET.

A candidate is eligible to appear for Industrial Training assessment (Seminar/Viva-voce)

a) Puts the required percentage of attendance, ie., 90% in 6th semester Industrial Training

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance, ie., 90% in 6th semester Industrial Training.
b) should get eligibility to appear for 5th Semester Examination.

B) For Diploma Courses of 3 ½ Years duration (MET/ CH/ CHPP/CHPC/CHOT/TT):

i. A candidate shall be permitted to appear for 1st year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.
ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the 1st year and pays the examination fee. A candidate who could not pay the 1st year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 3rd semester.
iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate, who could not pay the 3rd semester exam fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 4th semester.

A candidate is eligible to appear for the 4th semester exam if he/she

a). Puts the required percentage of attendance in the 4th semester
b). Should not have failed in more than Four backlog Courses of 1st year.

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance in the 4th semester

iv. A candidate shall be promoted to 5th semester industrial training provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

v. Promotion from 5th to 6th semester is automatic (i.e., from 1st spell of Industrial Training to 2nd spell) provided he/she puts the required percentage of attendance, which in this case ie.,90 % of attendance and attends for the VIVA-VOCE examination at the end of training.

vi. A candidate shall be promoted to 7th semester provided he / she puts the required percentage of attendance in the 6th semester and pays the examination fee. A candidate, who could not pay the 6th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 7th semester.

vii. A candidate shall be promoted to 7th semester of the course provided he/she has successfully completed both the spells of Industrial Training.

A candidate is eligible to appear for 7th semester examination if he/she

a) Puts in the required percentage of attendance in the 7th semester
b) Should get eligibility to appear for 4th semester Examination.

For IVC & ITI Lateral Entry students:

a) Puts in the required percentage of attendance in the 7th semester
b) Should not have failed more than four backlog Courses of 3rd Semester

C) For Diploma Courses of 3 ½ Years duration (BM):

The same rules which are applicable for conventional courses also apply for this course. The industrial training in respect of this course is restricted to one semester (6 months) after the 6th semester (3 years) of the course.

i. A candidate shall be permitted to appear for first year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.

ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the first year and pays the examination fee. A candidate who could not pay the first year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 3rd semester.

iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate who could not pay the 3rd semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 4th semester.

A candidate is eligible to appear for the 4th semester examination if he/she

a) Puts in the required percentage of attendance in the 4th semester
b) Should not have failed in more than Four backlog Courses of 1st year

For IVC & ITI Lateral Entry Students:

A candidate is eligible to appear for the 4th semester examination if he/she puts the required percentage of attendance in the 4th semester

iv. A candidate shall be promoted to 5th semester provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

A candidate is eligible to appear for the 5th semester exam if he/she

a) Puts in the required percentage of attendance in the 5 th semester.
b) Should get eligibility to appear for 4th Semester examination.

For IVC & ITI Lateral Entry students:

a) Puts in the required percentage of attendance in the 5th semester.
b) Should not have failed in more than Four backlog Courses of 3rd Semester.

v. A candidate shall be promoted to 6th semester provided he/she puts in the required percentage of attendance in the 5th semester and pays the examination fee.

A candidate, who could not pay the 5th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 6th semester.

A candidate is eligible to appear for 6th semester examination

a) Puts in the required percentage of attendance in 6th semester and
b) should get eligibility to appear for 4th Semester Examination.

For IVC & ITI Lateral Entry students:

a) Puts in the required percentage of attendance in 6th semester.
b) Should get eligibility to appear for 5th Semester Examination.

vi. A candidate shall be promoted to 7th semester provided he/she puts in the required percentage of attendance in 6th semester and pay the examination fee. A candidate, who could not pay the 6th semester examination fee, has to pay the promotion fee prescribed by SBTET from time to time before commencement of the 7th semester (Industrial Training).

A candidate is eligible to appear for 7th semester Industrial Training assessment (Seminar/Viva-voce) if he/she

a) Puts in the required percentage of attendance, ie., 90% in 7th semester Industrial Training
b) Should get eligibility to appear for 4th Semester Examination.

For IVC & ITI Lateral Entry students:

a) Puts in the required percentage of attendance, ie., 90% in 7th semester Industrial Training.

b) Should get eligibility to appear for 5th Semester Examination.

Important Note:

Seminar/Viva-voce should not be conducted for Not-Eligible Candidates, till the candidate gets eligibility. However, the record of internal Assessment for Industrial Training for 260 marks shall be maintained at Institution Level for all candidates and the data is to be uploaded only for eligible candidates. For not eligible candidates the data is to be uploaded as and when the candidate gets eligibility.

OTHER DETAILS

a) In case a candidate does not successfully complete the Industrial training, he / she will have to repeat the training at his / her own cost.
b) The First spell of Industrial training shall commence 10 days after the completion of the last theory examination of 4th Semester.
c) The Second spell of Industrial training shall commence within 10 days after the completion of first spell of Industrial training.

13. STUDENTS PERFORMANCE EVALUATION

Successful candidates shall be awarded the Diploma under the following divisions of pass.

a) First Class with Distinction shall be awarded to the candidates who secure an overall aggregate of 75% marks and above.
b) First Class shall be awarded to candidates who secure overall aggregate of 60% marks and above and below 75% marks.
c) Second Class shall be awarded to candidates who secure a pass with an overall aggregate of below 60%.
    i. The Weightage of marks for various year/Semesters which are taken for computing overall aggregate shall be 25% of I year marks + 100% of 3rd and subsequent Semesters.
    ii. In respect IVC & ITI Lateral Entry candidates who are admitted directly into diploma course at the 3rd semester (i.e., second year) level the aggregate of (100%) marks secured at the 3rd and subsequent semesters of study shall be taken into consideration for determining the overall percentage of marks secured by the candidates for award of class/division.
d) Second Class shall be awarded to all students, who fail to complete the Diploma in the regular 3 years/ 3 ½ years and four subsequent examinations, from the year of first admission.

14. EXAMINATION FEE SCHEDULE:

The examination fee should be as per the notification issued by State Board of Technical Education and Training, AP from time to time.

15. STRUCTURE OF EXAMINATION QUESTION PAPER:

I. Formative assessment (Internal examination)

a) For theory Courses:

Three unit tests for first year and two unit tests for semesters shall be conducted with duration of 90 minutes for each test for maximum marks of 40. It consists of part A and Part B.

Part A contains five questions and carries 16 marks. Among these five questions first question consists of four objective items like one word or phrase answer/filling-in the blanks/true or false etc with one mark for each question. The

other four questions are short answer questions and carry three marks each.

Part B carries 24 marks and consists of three questions with internal choice i.e., Either/Or type , and each question carries 8 marks.

The sum of marks of 3 tests for I year and 2 tests for semesters shall be reduced to 20 marks in each Course for arriving at final sessional marks.

b) For drawing Courses:

For I year:

Three unit tests with duration of 90 minutes and for maximum marks of 40 marks shall be conducted for first year. It consists of part A and Part B.

Part A consists four questions for maximum marks of 16 and each question carries four marks (4×4 marks=16 marks).

Part B carries maximum marks of 24 and consists of five questions while the student shall answer any three questions out of these five questions. Each question in this part carries a maximum marks of 8, (3×8 marks=24 marks).

The sum of marks obtained in 3 unit test marks shall be reduced to 20 marks for arriving at final sessional marks. Remaining 20 marks are awarded by the Course teacher based on the student's performance during regular class exercise.

For semester: Two unit tests with duration of 90 minutes and for maximum marks of 40 marks shall be conducted. The sum of marks obtained in 2 unit test marks shall be reduced to 20 marks for arriving at final sessional marks. Remaining 20 marks are awarded by the Course teacher based on the student's performance during regular class exercise

c) For Laboratory /workshop: 50% of total marks for the Course shall be awarded based on continuous assessment of the student in laboratory/workshop classes and the remaining 50% shall be based on the sum of the marks obtained by the students in two tests.

II. Summative assessment (End examination)

The question paper for theory examination is patterned in such a manner that the Weightage of periods/marks allotted for each of the topics for a particular Course be considered. End Examination paper is of 3 hours duration.

a) **Each theory paper consists of Section 'A', 'B' and 'C'**.

Section 'A' with Max marks of 30, contains 10 short answer questions. All questions are to be answered and each carries 3 marks, i.e., 10 x 3 = 30.

Section 'B' with Max marks of 40 contains 5 essay type questions including Numerical questions (without any divisions in the question), with internal choice(Either/or type), each carrying 8 marks, i.e., Max. Marks: 5 x 8 = 40.

Section 'C' with Max marks of 10 contains single essay type, Higher order Thinking skills question (HoTs) including Numerical questions, without choice (without any divisions in the question),

Thus the total marks for theory examination shall be: 80.

b) **For Engineering Drawing Course (107) consist of section 'A' and section 'B'**.

Section 'A' with max marks of 20, contains four (4) questions. All questions in section 'A' are to be answered to the scale and each carries 5 marks, ie. 4 x 5=20.

Section 'B' with max marks of 40, contains six (6) questions. The student shall answer any four (4) questions out of the above six questions and each question carries 10 Marks, ie. 4 x 10 = 40.

c) **Practical Examinations**

For Workshop practice and Laboratory Examinations, Each student has to pick up a question paper distributed by Lottery System.

Max. Marks for an experiment / exercise : 50
Max. Marks for VIVA-VOCE : 10
Total Max. Marks : 60

In case of practical examinations with 50 marks, the marks shall be distributed as

Max. Marks for an experiment / exercise : 25
Max. Marks for VIVA-VOCE : 05
Total Max. Marks : 30

In case of any change in the pattern of question paper, the same shall be informed sufficiently in advance to the candidates.

d) **Note: Evaluation for Laboratory Courses, other than Drawing courses**:

I. Instruction (teaching) in laboratory courses (except for the course on Drawing) hereafter shall be task/competency based as delineated in the Laboratory sheets, prepared by SBTET, AP and posted in its website.

II. Internal assessment for Laboratory shall be done on basis of task/s performed by the student as delineated in the laboratory sheets, prepared by SBTET, AP and posted in its website.

III. Question paper for End semester Evaluation shall be prepared as per SBTET rules in vogue.

16. ISSUE OF MEMORONDUM OF MARKS

All candidates who appear for the end examination will be issued memorandum of marks without any payment of fee. However candidates who lose the original memorandum of marks have to pay the prescribed fee to the Secretary, State Board of Technical Education and Training, A.P. for each duplicate memo from time to time.

17. MAXIMUM PERIOD FOR COMPLETION OF DIPLOMA Programmes:

Maximum period for completion of the diploma courses is twice the duration of the course from the date of First admission (includes the period of detention and discontinuation of studies by student etc) failing which they will have to forfeit the claim for qualifying for the award of Diploma (They will not be permitted to appear for examinations after that date). This rule applies for all Diploma courses of 3 years and 3 ½ years of engineering and non-engineering courses.

18. ELIGIBILITY FOR AWARD OF DIPLOMA

A candidate is eligible for award of Diploma Certificate if he / she fulfil the following academic regulations.

i. He / She pursued a course of study for not less than 3 / 3 ½ academic years & not more than 6 / 7 academic years.

ii. He / she have completed all the Courses.

Students who fail to fulfil all the academic requirements for the award of the Diploma within 6 / 7 academic years from the year of admission shall forfeit their seat in the course & their seat shall stand cancelled.

For IVC & ITI Lateral Entry students:

i. He / She pursued a course of study for not less than 2 / 2 ½ academic years & not more than 4 / 5 academic years.

ii. He / she have completed all the Courses.

Students who fail to fulfil all the academic requirements for the award of the Diploma within 4 / 5 academic years from the year of admission shall forfeit their seat in the course & their seat shall stand cancelled.

19. ISSUE OF PHOTO COPY OF VALUED ANSWER SCRIPT, RECOUNTING& REVERIFICATION:

A) FOR ISSUE OF PHOTO COPIES OF VALUED ANSWER SCRIPTS

I. A candidate desirous of applying for Photo copy of valued answer script/s should apply within prescribed date from the date of the declaration of the result.

II. Photo copies of valued answer scripts will be issued to all theory Courses and Drawing Course(s).

III. The Photo copy of valued answer script will be dispatched to the concerned candidate's address as mentioned in the application form by post.

IV. No application can be entertained from third parties.

B) FOR RE-COUNTING(RC) and RE-VERIFICATION(RV) OF THE VALUED ANSWER SCRIPT

i. A candidate desirous of applying for Re-verification of valued answer script should apply within prescribed date from the date of the declaration of the result.

ii. Re-verification of valued answer script shall be done for all theory Courses' and Drawing Course(s).

iii. The Re-verification committee constituted by the Secretary, SBTETAP with Course experts shall re-verify the answer scripts.

I. **RE-COUNTING**

The Officer of SBTET will verify the marks posted and recount them in the already valued answer script. The variations if any will be recorded separately, without making any changes on the already valued answer script. The marks awarded in the original answer script are maintained (hidden).

II. RE-VERIFICATION

(i) The Committee has to verify the intactness and genuineness of the answer script(s) placed for Re-verification.

(ii) Initially single member shall carry out the re-verification.

(iii) On re-verification by single member, if the variation is less than 12% of maximum marks, and if there is no change in the STATUS in the result of the candidate, such cases will not be referred to the next level ie., for 2-Tier evaluation.

(iv) On re-verification by a single member, if the variation is more than 12% of maximum marks, it will be referred to 2-Tier evaluation.

(v) If the 2-Tier evaluation confirms variation in marks as more than 12% of maximum marks, the variation is considered as follows:

a) If the candidate has already passed and obtains more than 12% of the maximum marks on Re-verification, then the variation is considered.

b) If the candidate is failed and obtains more than 12% of the maximum marks on Re-verification and secured pass marks on re-verification, then the status of the candidate changes to PASS.

c) If a candidate is failed and obtains more than 12% of the maximum marks on Re-verification and if the marks secured on re-verification are still less than the minimum pass marks, the status of the candidate remain FAIL only.

(vi)After Re-verification of valued answer script the same or change if any therein on Re-verification, will be communicated to the candidate.

(vii) On Re-verification of Valued Answer Script if the candidate's marks are revised, the fee paid by the candidate will be refunded or else the candidate has to forfeit the fee amount.

Note: No request for Photo copies/ Recounting /Re-verification of valued answer script would be entertained from a candidate who is reported to have resorted to Malpractice in that examination.

20. MAL PRACTICE CASES:

If any candidate resorts to Mal Practice during examinations, he / she shall be booked and the Punishment shall be awarded as per SBTETAP rules and regulations in vogue.

21. DISCREPANCIES/ PLEAS:

Any Discrepancy /Pleas regarding results etc., shall be represented to the SBTETAP within one month from the date of issue of results. Thereafter, no such cases shall be entertained in any manner.

22. ISSUE OF DUPLICATE DIPLOMA

If a candidate loses his/her original Diploma Certificate and desires a duplicate to be issued he/she should produce written evidence to this effect. He / she may obtain a duplicate from the Secretary, State Board of Technical Education and Training, A.P., on payment of prescribed fee and on production of an affidavit signed before a First Class Magistrate (Judicial) and non-traceable certificate from the Department of Police. In case of damage of original Diploma Certificate, he / she may obtain a duplicate certificate by surrendering the original damaged certificate on payment of prescribed fee to the State Board of Technical Education and Training, A.P.

In case the candidate cannot collect the original Diploma within 1 year from the date of issue of the certificate, the candidate has to pay the penalty prescribed by the SBTET AP from time to time.

23. ISSUE OF MIGRATION CERTIFICATE AND TRANSCRIPTS:

The Board on payment of prescribed fee will issue these certificates for the candidates who intend to prosecute Higher Studies in India or Abroad.

24. The following specific changes are discussed and incorporated:

All the courses in earlier curricula are reviewed and the following specific changes are discussed and incorporated.

- ✓ During the workshop an idea of modular scheme of instruction has emerged which doesn't suit to Architecture program as Architecture programme is a combination of art and technology. Architecture program involves more of creativity, visualization, perception of design concepts and art skills, which cannot be attained in one-week modules but needs a continuous practice. Hence, modular system of C-20 cannot be adopted for Architecture programme.
- ✓ Contemporary topics related to certain subjects are introduced for

updating the student to fit for the industry.

- ✓ It is proposed to have five theory and five practical/ drawing courses in each semester.
- ✓ From C-05 curriculum, Industrial training has been successfully running and it is very beneficial to students in getting practical exposure and also getting placements. Consulting architects strongly suggested to continue it in C-20 also as practical exposure is the very essence of Architectural education and practical training cannot be separated from architecture curriculum. Hence, practical training is continued for one full semester at fifth semester level.
- ✓ AA-105 Building materials: market survey on material specimen collection is added to enable the students to visualize the materials and to know their costs. Classification of stones in chapter 1, glass bricks in chapter 10, anti-fungus & anti corrosive paints in chapter 12, PVC doors 7 windows, plastics for water tanks & false ceilings, Gypsum boards, Aluminum elevation sheets & composite panels, poly carbonate sheets, cement boards, tensile roofing are added inchapter14.
- ✓ AA-106 Basic design-chapter 05 (color theory) has been added and the exercises to be done are specifically mentioned under separate heading “exercises”.
- ✓ AA-107 Architectural Graphics: Conic Sections are added in chapter7, which is a new topic which strengthens the subject.
- ✓ AA-302 History of Indian Architecture: Deccan architecture in chapter 8 & Mughal gardens in chapter 9 are added.
- ✓ AA-304: In Surveying, Total station is included in the new draft curriculum.
- ✓ AA-306: Architectural design-I & AA-406: Architectural design-II Case study is added inC-20 curriculum to have practical exposure before designing the architectural portfolios. Barrier free aspects are included in design problems.
- ✓ AA-307: Building construction drawing-I & AA-407: Building construction drawing-II topics are kept in a sequence of constructional operations of a building i.e. from foundation to parapet level.
- ✓ AA-308 Interior Designing and Landscaping chapter 04 (Landscape Elements) The elements have been categorized and elaborated.
- ✓ AA-310: In Surveying Practical’s – Practical’s on Total station is added.
- ✓ AA-403 World Architecture In chapter 05, Byzantine Architecture has been included and in chapter 06 Gothic architecture Reims Cathedral has been added.
- ✓ Urban planning subject is shifted from IV semester to VI semester.
- ✓ AA-602 Modern Architecture: In chapter 01 (industrial revolution) three structures were added. New chapter 03 (Colonial architecture of India) has been introduced. From chapter 04 one topic Hashmukh Patel has been deleted.
- ✓ AA-604 Structural Design: in chapter 1-various types of concretes and concreting methods are added and working stress method is deleted.

- ✓ Consulting Architects suggested adding Building Services drawing and Practical's. HenceAA-606 Building services drawing has been introduced in place of Building services lab and Practical are covered in construction practice Lab. Two topics 1.Illumination 2. Green buildings are included
- ✓ AA-610 Project work in added in 6th semester and one subject "Design Practice lab" is deleted from 6th semester as its contents are repeating in project work.

11.GENERAL

i. The Board may change or amend the academic rules and regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students, for whom it is intended, with effect from the dates notified by the competent authority.

ii. All legal matters pertaining to the State Board of Technical Education and Training, AP are within the jurisdiction of Vijayawada.

iii. In case of any ambiguity in the interpretation of the above rules, the decision of the Secretary, SBTET, A.P is final.

DAA
(Diploma in Architectural Assistantship)

Vision

Develop Architectural Assistants (Diploma Architects) to be competent technically, aesthetically and professionally active in the field, to present the Architectural themes, schemes and projects and to create self-sufficient and employed individuals to serve the society through professionalism, ethics and values.

Mission

M1: To provide a suitable base of learning of Architectural education through curriculum and make it conducive to produce proficient professionals in the field of activity.

M2: To enable to learn and apply the learnt skills, while in profession or in the job or in industry.

M3: To produce quality professionals who can make and present the Architectural concepts suitable to the project and work independently and collectively in a team maintaining human values and ethics.

M4:To create self-sufficient individuals, who can serve and transform the society through their profession.

Program Educational Objectives(PEOs)

Architecture (Shelter Creation) is the very basic essential subject and profession, after Foodland Clothing (Roti, Kapada). It is the profession that can transform the people, cities and the whole of the environments. It is the most visual subject and profession that is visible and evident everywhere in all the human habitats. The world's great civilizations, prosperity and developments are measured and remembered by their great monumental structures and the city - scapes. The subject is well connected to all the fields such as residential, educational, religious, spiritual, commercial, health, industrial, recreational, political, transport, cinema, sports and games. The profession is ever-active and can influence all the sectors and can bring vital changes in every field of activity. The scope of the profession is unlimited and ever-changing.

PEO1: To enable to learn and apply the essential shelter needs of human beings in architectural designs and use them to the need and utility in making architectural environments.

PEO2: To enable to know the materials of construction and architectural design, and make the architectural drawings, approval drawings, do estimates of materials and cost.

PEO3: To be active in the fields of communication, soft skills and entrepreneurial, and work independently or in a team.

PEO4: To be ever-active and changeable to the changing needs and contemporary needs of people and society.

PEO5: Maintain professional codes, ethics and human values and be active and resilient in the aspects of local, regional, national and international developments, culture, work culture and environment.

Programme Outcomes (Pos)	
Students completing **Diploma in Architectural Assistantship** are anticipated to have the abilities below:	
PO1	*Apply Knowledge of Basic Mathematics, Science and Engineering Fundamentals and Engineering Specialization to solve engineering problems.*
PO2	*Identify and Analyze well-defined engineering problems using codified standard methods.*
PO3	*Design Solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.*
PO4	*Apply Modern Engineering tools and appropriate technique to conduct standard tests and measurements.*
PO5	*Apply appropriate technology in the context of Society, Sustainability, Environment and Ethical Practices.*
PO6	*Use Engineering Management Principles individually, as a Team member or as a Leader to manage Projects and effectively communicate about well-defined engineering activities.*
PO7	*A individual needs and engage in updating in the context of technological changes.*

Programme Specific Outcomes(PSos)	
PSO1	Acquiring programme knowledge and skills and its application in jobs.
PSO2	Acquiring knowledge for continuing to Higher studies
PSO3	Developing Self-employment skills to establish individual Architectural consultancy services

(C-20)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)

FIRST YEAR

Course Code	Name of the Course	Instruction period per week		Total periods per Year	Scheme of Examination			
		Theory	Practical		Duration Hr	Sessional Marks	End exam marks	
THEORY								
AA-101	English -I	03	--	90	3	20	80	100
AA-102	Engineering Mathematics-I	05	-	150	3	20	80	100
AA-103	Engineering Physics	04	--	120	3	20	80	100
AA-104	Engineering Chemistry & Environmental Studies	04	--	120	3	20	80	100
AA-105	Building Materials	04	--	120	3	20	80	100
PRACTICALS								
AA-106	Basic Design	--	06	180	6	40	60	100
AA-107	Architectural Graphics	--	04	120	3	40	60	100
AA-108	Perspective and Sciography	--	06	180	3	40	60	100
AA-109	Physics Laboratory	--	03	90	3	20	30	50
AA-110	Chemistry Laboratory				3	20	30	50
AA-111	Computer Fundamentals Lab	--	03	90	3	40	60	100
	Totals	**20**	**22**	**1260**	---	**300**	**700**	**1000**

Note: Instructions For End Examinations:-

- ✓ For AA-107 & AA-108, Big Size Drawing sheets are to be issued as many as required by the candidate,
- ✓ For AA-106 ,a separate small drawing sheet to be provided to answer Part A which is to be collected at the end of first session. The drawing sheets to be issued for Part-B after completion of Part-A during the first session itself.

(C-20)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)
III SEMESTER

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-301	Engineering Mathematics – II	04	-	60	03	20	80	100
AA-302	History of Indian Architecture	04	--	60	03	20	80	100
AA-303	Engineering Mechanics	05	-	75	03	20	80	100
AA-304	Surveying	04	--	60	03	20	80	100
AA-305	Building Specifications	03	--	45	03	20	80	100
PRACTICALS								
AA-306	Architectural Design – I	--	06	90	09	40	60	100
AA-307	Building Construction Drawing-I	--	03	45	03	40	60	100
AA-308	Interior and Landscape Design	--	03	45	03	40	60	100
AA-309	Computer Aided Design and Draughting Lab-I	--	06	90	03	40	60	100
AA-310	Surveying practical	--	04	60	03	40	60	100
	Totals	**20**	**22**	**630**	**--**	**300**	**700**	**1000**

Note:

1. For AA-306, big size Drawing and Tracing sheets to be used and issued in the end examination.
2. A separate drawing sheet to be provided to answer Part A.
3. Required number of additional drawing sheets of big size to be provided.
4. Drawing sheet of Part-A to be collected at the end of First session.
5. The tracing of plan to be collected at the end of Second session.
6. For AA-307 & AA-308, big size Drawing sheets, as many as required, to be issued, in the end examination.

(C-20)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)

IV SEMESTER

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-401	Engineering Mathematics-III	03	-	45	03	20	80	100
AA-402	Environmental Engineering	04	-	60	03	20	80	100
AA-403	History of World Architecture	04	--	60	03	20	80	100
AA-404	Theory of Structures	06	-	90	03	20	80	100
AA-405	Quantity Survey	04	--	60	03	20	80	100
PRACTICAL								
AA-406	Architectural Design – II	--	06	90	09	40	60	100
AA-407	Building Construction Drawing-II	--	03	45	03	40	60	100
AA-408	Communication Skills	--	03	45	03	40	60	100
AA-409	Computer Aided Design and Draughting Lab-II	--	06	90	03	40	60	100
AA-410	Model Making Lab	--	03	45	03	40	60	100
	Totals	**21**	**21**	**630**	**--**	**300**	**700**	**1000**

Note 1: A separate full-fledged CADD lab is to be established to meet all the teaching needs as per curriculum. Sufficient systems, furniture and interior to be equipped as per the strength. Sufficient stationary for CADD lab to be provided for running the course work and also for end exams.

Note 2: 1) For AA-406, big size Drawing and Tracing sheets to be used and issued, in the end examination.

2) A separate drawing sheet to be provided to answer Part A.
3) Required number of additional drawing sheets of big size to be provided,
4) Drawing sheet of Part-A to be collected at the end of First session,
5) The tracing of plan to be collected at the end of Second session.
6) For AA-407, big size Drawing sheets, as many as required, to be issued, in the end examination.

(C-20)

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)

SCHEME OF INSTRUCTIONS AND EXAMINATIONS

AA-501 PRACTICAL TRAINING

V SEMESTER

S.NO	Name of the course	Duration	Items		Max Marks
1	Practical Training in an Architectural consultancy /Firm	6 Months	**1.First Assessment** (As per Rubric Assessment Format to be assessed by 1.The faculty concerned and 2. Training Mentor of the Architectural consultancy/Firm at the end of 3rd month)		120
			2. Second Assessment (As per Rubric Assessment Format to be assessed by 1.The faculty concerned and 2. Training Mentor of the Architectural consultancy/Firm at the end of 6th month)		120
			3.Final assessment To be assessed by (1) The faculty member concerned, (2) HoD concerned and (3) An external examiner	3. Log Book	20
				4. Portfolio	20
				5. Seminar	20
TOTAL MARKS					***300***

Note: The candidate has to undergo training for a complete period of six months only under the guidance of Architect, registered with Council of Architecture, having established a firm.

The Practical training shall carry 300 marks and minimum pass marks is **50**% out of total marks. A candidate failing to secure the minimum marks should complete it at his own expenses. During Practical training the candidate shall put in a minimum of **90%**attendence.

(C-20) VI SEMESTER

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-601	Entrepreneurship and Project Management	04	--	60	03	20	80	100
AA-602	Modern Architecture	04	--	60	03	20	80	100
AA-603	Professional Practice & Building Bye-laws	03	--	45	03	20	80	100
AA-604	Structural Design	06	--	90	03	20	80	100
AA-605	Urban Planning	03	---	45	03	20	80	100
PRACTICALS								
AA-606	Building Services Drawing	--	06	90	03	40	60	100
AA-607	Working Drawings Practice Lab	--	04	60	03	40	60	100
AA-608	Life Skills	---	03	45	03	40	60	100
AA-609	Construction Practice Lab	--	03	45	03	40	60	100
AA-610	Project Work	--	06	90	---	40	60	100
	Totals	**20**	**22**	**630**	**--**	**300**	**700**	**1000**

Note1: AA-602 contains 20 periods of Smart Technologies which includes IOT and other computer related topics. One essay question and one short answer question should be given from this topic.

Note2: A separate full-fledged CADD lab is to be established to meet all the teaching needs as per curriculum. Sufficient systems, furniture and interior to be equipped as per the strength. Sufficient stationary for CADD lab is to be provided for running the course work and also for end exams

Note3: Materials to be provided for CP lab and establish a lab for it, in absence of the said lab the same is to be conducted in civil labs or relevant labs.

Note4: For AA-606, big size Drawing sheets, as many as required, to be issued, in the end examination.

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FIRST YEAR

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A) SCHEME OF INSTRUCTIONS AND EXAMINATIONS FIRST YEAR(C-20)

Course Code	Name of the Course	Instruction period Per week		Total period per Year	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End exam marks	
THEORY								
AA-101	English-I	03	--	90	3	20	80	100
AA-102	Engineering Mathematics-I	05	-	150	3	20	80	100
AA-103	Engineering Physics	04	--	120	3	20	80	100
AA-104	Engineering Chemistry & Environmental Studies	04	--	120	3	20	80	100
AA-105	Building Materials	04	--	120	3	20	80	100
PRACTICALS								
AA-106	Basic Design	--	06	180	6	40	60	100
AA-107	Architectural Graphics	--	04	120	3	40	60	100
AA-108	Perspective and Sciography	--	06	180	3	40	60	100
AA-109A	Physics Laboratory	--	03	90	3	20	30	50
AA-109B	Chemistry Laboratory				3	20	30	50
AA-110	Computer Fundamentals Lab	--	03	90	3	40	60	100
	Totals	**20**	**22**	**1260**	---	**300**	**700**	**1000**

ENGLISH

Course Code	Course Title	No. of Periods/Week	Total No. of Periods	Marks for FA	Marks for SA
AA-101	English	3	90	20	80

S. No.	Unit Title	No of Periods	COs Mapped
1	English for Employability	8	CO1, CO2, CO3, CO4
2	Living in Harmony	8	CO1, CO2, CO3, CO4
3	Connect with Care	8	CO1, CO2, CO3, CO4
4	Humour for Happiness	8	CO1, CO2, CO3, CO4
5	Never Ever Give Up!	8	CO1, CO2, CO3, CO4
6	Preserve or Perish	9	CO1, CO2, CO3, CO4
7	The Rainbow of Diversity	8	CO1, CO2, CO3, CO4
8	New Challenges- Newer Ideas	8	CO1, CO2, CO3, CO4
9	The End Point First!	8	CO1, CO2, CO3, CO4
10	The Equal Halves	8	CO1, CO2, CO3, CO4
11	Dealing with Disaster	9	CO1, CO2, CO3, CO4
Total Periods		**90**	

Course Objectives	To improve the skills of English Language use by enriching vocabulary and learning accurate structures for effective communication.
	To comprehend themes for value based living in professional and personal settings.

CO No.	Course Outcomes
CO1	Applies perceptions of themes related to societal responsibility of adolescents towards their surroundings.
CO2	Demonstrates knowledge of form and function of ‘grammar items’ and use them in both academic and everyday situations.
CO3	Demonstrates effective English communication skills with competence in listening, speaking, reading and writing in academic, professional and everyday contexts.
CO4	Displays positivity and values of harmonious living in personal and professional spheres as reflected through communication.

Blue Print of Question Paper:

S. No.	Name of the Unit	Periods Allocated	Weightage Allocated	Marks Wise Distribution of Weightage				Question Wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	English for Employability	8	17	3	8*			1	1*	1*		CO1, CO2, CO3, CO4
2	Living in Harmony	8		3				1				CO1, CO2, CO3, CO4
3	Connect with Care	8				3						CO1, CO2, CO3, CO4
4	Humour for Happiness	8	14		3	8*			1	1*		CO1, CO2, CO3, CO4
5	Never Ever Give Up!	8			3				1			CO1, CO2, CO3, CO4
6	Preserve or Perish	9	14		8*	3	10*		1*	1		CO1, CO2, CO3, CO4
7	The Rainbow of Diversity	8				3				1		CO1, CO2, CO3, CO4
8	New Challenges - Newer Ideas	8	35		8*	8*+3+3+3			1*	4	1*	CO1, CO2, CO3, CO4
9	The End Point First!	8										CO1, CO2, CO3, CO4
10	The Equal Halves	8										CO1, CO2, CO3, CO4
11	Dealing with Disasters	9										CO1, CO2, CO3, CO4
TOTAL		**90**	**80**	**6**	**30**	**34**	**10**	**2**	**5**	**8**	**1**	

PART-A: 10 Questions 3 marks each =30 Marks	All Questions are compulsory : 60 minutes
PART-B: 5 Questions 8 marks each =40 Marks	Internal choice : 90 minutes
Part-C: 1 Question 10 marks =10 Marks (Higher Order Question)	No choice, one compulsory question : 30 minutes
NOTE: * indicates questions can be given from any of the corresponding lessons in the blue print.	

Question Paper Pattern for Unit Tests

Part A: 16 marks: 4 questions with 1 mark each (FIB, True/false, one word/phrase, etc.)
4 questions with 3 marks each (short answer/ descriptive/ applicative questions)

Part B: 24 marks: 3 questions 8 marks each with internal choice

Learning Outcomes

1. English for Employability

1.1. Explain the need for improving communication in English for employability
1.2. Use adjectives and articles effectively while speaking and in writing
1.3. Write simple sentences

2. Living in Harmony

2.1. Develop positive self-esteem for harmonious relationships
2.2. Use affixation to form new words
2.3. Use prepositions and use a few phrasal verbs contextually

3. Connect with Care

3.1. Use social media with discretion
3.2. Speak about abilities and possibilities
3.3. Make requests and express obligations
3.4. Use modal verbs and main verbs in appropriate form
3.5. Write short dialogues for everyday situations

4. Humour for Happiness

4.1. Explain the importance of humour for a healthy living
4.2. Improve vocabulary related to the theme
4.3. Display reading and speaking skills
4.4. Frame sentences with proper Subject – Verb agreement
4.5. Explain the features of a good paragraph and learn how to gather ideas as a preliminary step for writing a good paragraph.

5. Never Ever Give Up!

5.1. Practice to deal with failures in life.
5.2. Use the present tense form for various every day communicative functions such as speaking and writing about routines, professions, scientific descriptions and sports commentary.
5.3. Write paragraphs with coherence and other necessary skills.

6. Preserve or Perish

6.1. Describe the ecological challenges that we face today and act to save the environment.
6.2. Narrate / Report past events.
6.3. Develop vocabulary related to environment.
6.4. Write e-mails.

7. The Rainbow of Diversity

7.1. Illustrate and value other cultures for a happy living in multi-cultural workspace
7.2. use different types of sentences
7.3. Ask for or give directions, information, instructions
7.4. Use language to express emotions in various situations
7.5. Write letters in various real life situations

8. New Challenges – Newer Ideas

8.1. Explain the functional difference between Active Voice and Passive Voice
8.2. Use Passive Voice to speak and write in various contexts
8.3. List the major parts and salient features of an essay
8.4. Explain latest innovations and get motivated

9. The End Point First!

9.1. Illustrate the importance of setting a goal in life
9.2. Report about what others have said both in speaking and writing
9.3. Write an essay following the structure in a cohesive and comprehensive manner

9.4. Apply the words related to Goal Setting in conversations and in life

10. The Equal Halves

10.1. Value the other genders and develop a gender-balanced view towards life
10.2. Identify the use of different conjunctions in synthesising sentences
10.3. Write various types of sentences to compare and contrast the ideas
10.4. Apply the knowledge of sentence synthesis in revising and rewriting short essays
10.5. Develop discourses in speech and writing

11. Dealing with Disasters

11.1. Speak and write about different kinds of disasters and the concept of disaster management
11.2. Generate vocabulary relevant to disaster management and use it in sentences
11.3. Analyse an error in a sentence and correct it
11.4. write different kinds of reports

Textbook: INTERACT (A Textbook for I Year English) - Published by SBTET, AP

Reference Books:

- Martin Hewings :Advanced Grammar in Use, Cambridge University Press
- Murphy, Raymond : English Grammar in Use,Cambridge University Press
- Sidney Greenbaum : Oxford English Grammar, Oxford University Press
- Wren and Martin (Revised ByN.D.V. Prasad Rao) : English Grammar and Composition, Blackie ELT Books, S. Chand and Co.
- Sarah Freeman :Strengthen Your Writing, Macmillan

ENGINEERING MATHEMATICS-I

Course Code	Course Title	No. of Periods/week	Total No. of periods	Marks for FA	Marks for SA
AA-102	Engineering Mathematics-I	5	150	20	80

S.No.	Unit Title	No. of periods	COs mapped
1	Algebra	31	CO1
2	Trigonometry	44	CO2
3	Co-ordinate Geometry	23	CO3
4	Differential Calculus	33	CO4
5	Applications of Differentiation	19	CO4, CO5
	Total Periods	**150**	

Course Objectives	(i) To apply the principles of Algebra, Trigonometry and Co-Ordinate Geometry to real-time problems in engineering. (ii) To comprehend and apply the concept of Differential Calculus in engineering applications.

Course Outcomes	CO1	Identify various functions, resolve partial fractions and solve problems on matrices.
	CO2	Solve problems using the concept of trigonometric functions, their inverses and complex numbers.
	CO3	Find the equations and properties of straight lines, circles and conic sections in coordinate system.
	CO4	Evaluate the limits and derivatives of various functions.
	CO5	Evaluate solutions for engineering problems using differentiation.

COMMON TO ALL BRANCHES

Learning Outcomes

UNIT - I

C.O. 1 Identify various functions, resolve partial fractions and solve problems on matrices.

L.O.1.1 Define Set, ordered pairs and Cartesian product - examples.

1.2 Explain Relations and functions – examples

1.3 Find Domain & Range of functions – simple examples.

1.4 Classify types of functions (into, many-to-one, one-one, onto and bijective).

1.5 Define inverse functions - examples.

1.6 Define rational, proper and improper fractions of polynomials.

1.7 Explain the procedure of resolving rational fractions of the type mentioned below into partial fractions

$i)\quad \frac{f(x)}{(ax+b)(cx+d)}$ $ii)\quad \frac{f(x)}{(ax+b)^2(cx+d)}$

$iii)\quad \frac{f(x)}{(x^2+a^2)(bx+c)}$ $iv)\quad \frac{f(x)}{(x^2+a^2)(x^2+b^2)}$

1.8 Define a matrix and order of a matrix.

1.9 State various types of matrices with examples (emphasis on 3rd order square

matrices).

1.10 Compute sum, scalar multiplication and product of matrices. Illustrate the properties of these operations such as associative, distributive, commutative properties with examples and counter examples.

1.11 Define the transpose of a matrix and write its properties;

1.12 Define symmetric and skew-symmetric matrices with examples Resolve a square matrix into a sum of a symmetric and skew- symmetric matrices and provide examples.

1.13 Define determinant of a square matrix, minor, co-factor of an element of a 3x3 square matrix with examples. Expand the determinant of a 3 x 3 matrix using Laplace expansion formula. State and apply the properties of determinants to solve problems.

1.14 Distinguish singular and non-singular matrices. Define multiplicative inverse of a matrix and list properties of adjoint and inverse. Compute adjoint and multiplicative inverse of a square matrix.

1.15 Solve system of 3 linear equations in 3 unknowns using Cramer's rule and matrix inversion method.

UNIT - II

C.O.2 Solve problems using the concept of trigonometric functions, their inverses and complex numbers.

L.O. 2.1 Define trigonometric ratios of any angle.

2.2 List the values of trigonometric ratios at specified values.

2.3 Draw graphs of trigonometric functions.

2.4 Explain periodicity of trigonometric functions.

2.5 Define compound angles and state the formulae of sin(A±B), cos(A±B), tan(A±B) and cot(A±B).

2.6 Give simple examples on compound angles to derive the values of $\sin 15^0$, $\cos 15^0$, $\sin 75^0$, $\cos 75^0$, $\tan 15^0$, $\tan 75^0$ etc.

2.7 Derive identities like $\sin(A+B)\sin(A-B) = \sin^2 A - \sin^2 B$ etc.

2.8 Solve simple problems on compound angles.

2.9 Derive the formulae of multiple angles 2A, 3A etc and sub multiple angles A/2 in terms of angle A of trigonometric functions.

2.10 Derive useful allied formulas like $\sin^2 A = (1 - \cos 2A)/2$ etc.

2.11 Solve simple problems using the above formulae

Syllabus for Unit test-I completed

2.12 Derive the formulae on transforming sum or difference of two trigonometric ratios into a product and vice versa, examples on these formulae.

2.13 Solve problems by applying these formulae to sum or difference or product of three or more terms.

2.14 Explain the concept of the inverse of a trigonometric function by selecting an appropriate domain and range.

2.15 Define inverses of six trigonometric functions along with their domains and ranges.

2.16 Derive relations between inverse trigonometric functions so that given $A = \sin^{-1}x$, express angle A in terms of other inverse trigonometric functions with examples.

2.17 State various properties of inverse trigonometric functions and identities like

$\sin^{-1}x+\cos^{-1}x = \frac{\pi}{2}$ etc.

2.18 Apply formulae like $\tan^{-1}x+\tan^{-1}y=\tan^{-1}\left(\frac{x+y}{1-xy}\right),\ where\ x\geq 0, y\geq 0, xy<1$ etc.,
to solve Simple problems.

2.19 Explain what is meant by solutions of trigonometric equations and find the general solutions of sin x=k, cos x =k and tan x=k with appropriate examples.

2.20 Solve models of the type a $\sin^2 x$ + b sin x +c=0, a cos x + b sin x=c etc., and problems using simple transformations.

2.21 State sine rule, cosine rule, tangent rule and projection rule.

2.22 Explain the formulae for sin A/2, cos A/2, tan A/2 and cot A/2 in terms of semi-perimeter s and sides a,b,c and solve problems.

2.23 List various formulae for the area of a triangle.

2.24 Solve problems using the above formulae.

2.25 Define Sinh x, cosh x and tanh x and list the hyperbolic identities.

2.26 Represent inverse hyperbolic functions in terms of logarithms.

2.27 Define complex number, its modulus , conjugate and list their properties.

2.28 Define the operations on complex numbers with examples.

2.29 Define amplitude of a complex number.

2.30 Represent the complex number in various forms like modulus-amplitude (polar) form, Exponential (Euler) form with examples.

2.31 Write DeMoivre's theorem (without proof) and illustrate with simple examples.

UNIT - III

Coordinate Geometry

C.O. 3 Find the equations and properties of straight lines, circles and conic sections in coordinate system.

L.O. 3.1 Write the different forms of a straight line – general form, point-slope form, slope-intercept form, two-point form, intercept form and normal form or perpendicular form.

3.2 Solve simple problems on the above forms.

3.3 Find distance of a point from a line, acute angle between two lines, intersection of two non parallel lines and distance between two parallel lines.

3.4 Define locus of a point and define a circle.

3.5 Write the general equation of a circle and find the centre and radius.

3.6 Find the equation of a circle given (i) centre and radius, (ii) two ends of a diameter (iii) Centre and a point on the circumference (iv) three non collinear points.

3.7 Define a conic section.

3.8 Explain the terms focus, directrix, eccentricity, axes and latus rectum of a conic with illustrations.

3.9 Find the equation of a conic when focus, directrix and eccentricity are given.

3.10 Describe the properties of Parabola, Ellipse and Hyperbola in standard forms whose axes are along co-ordinate axes and solve simple examples on above.

Syllabus for Unit test-II completed

C.O.4 Evaluate the limits and derivatives of various functions.

L.O. 4.1 Explain the concept of limit and meaning of $\lim_{x\to a} f(x)=l$ and state the

properties of limits.

4.2 Evaluate the limits of the type $\lim_{x\to l}\frac{f(x)}{g(x)}$ and $\lim_{x\to\infty}\frac{f(x)}{g(x)}$

4.3 Mention the Standard limits $\lim_{x\to a}\frac{x^n-a^n}{x-a}$, $\lim_{x\to 0}\frac{\sin x}{x}$, $\lim_{x\to 0}\frac{\tan x}{x}$, $\lim_{x\to 0}\frac{a^x-1}{x}$, $\lim_{x\to 0}\frac{e^x-1}{x}$, $\lim_{x\to 0}(1+x)^{\frac{1}{x}}$, $\lim_{x\to\infty}\left(1+\frac{1}{x}\right)^x$ (without proof) and solve the problems using these standard limits.

4.4 Explain the concept of continuity of a function at a point and on an interval with some examples whether a given function is continuous or not.

4.5 State the concept of derivative of a function y = f(x) – definition, first principle as $\lim_{h\to 0}\frac{f(x+h)-f(x)}{h}$ and also provide standard notations to denote the derivative of a function.

4.6 State the significance of derivative in scientific and engineering applications.

4.7 Find the derivatives of elementary functions like x^n , a^x, e^x, log x, sin x, cos x, tanx, Secx, Cosecx and Cot x using the first principles.

4.8 Find the derivatives of simple functions from the first principle .

4.9 State the rules of differentiation of sum, difference, scalar multiplication, product and quotient of functions with illustrative and simple examples.

4.10 Explain the method of differentiation of a function of a function (Chain rule) with illustrative examples.

4.11 Find the derivatives of Inverse Trigonometric functions and examples using the Trigonometric transformations.

4.12 Explain the method of differentiation of a function with respect to another function and also differentiation of parametric functions with examples.

4.13 Find the derivatives of hyperbolic functions.

4.14 Explain the procedures for finding the derivatives of implicit function with examples.

4.15 Explain the need of taking logarithms for differentiating some functions with examples like $[f(x)]^{g(x)}$.

4.16 Explain the concept of finding the higher order derivatives of second and third order with examples.

4.17 Explain the concept of functions of several variables, partial derivatives and difference between the ordinary and partial derivatives with simple examples.

4.18 Explain the definition of Homogenous function of degree n.

4.19 Explain Euler's theorem for homogeneous functions with applications to simple problems.

C.O. 5 Evaluate solutions for engineering problems using differentiation.

L.O. 5.1 State the geometrical meaning of the derivative as the slope of the tangent to the curve y=f(x) at any point on the curve.

5.2 Explain the concept of derivative to find the slope of tangent and to find the equation of tangent and normal to the curve y=f(x) at any point on it.

5.3 Find the lengths of tangent, normal, sub-tangent and sub normal at any point on the curve y=f(x) .

5.4 Explain the derivative as a rate of change in distance-time relations to find the velocity and acceleration of a moving particle with examples.
5.5 Explain the derivative as a rate measurer in the problems where the quantities like volumes, areas vary with respect to time- illustrative examples.
5.6 Define the concept of increasing and decreasing functions.
5.7 Explain the conditions to find points where the given function is increasing or decreasing with illustrative examples.
5.8 Explain the procedure to find the extreme values (maxima or minima) of a function of single variable- simple problems yielding maxima and minima.
5.9 Solve problems on maxima and minima in applications like finding areas, volumes etc.
5.10 Apply the concept of derivatives to find the errors and approximations in simple problems.

Syllabus for Unit test-III completed

COURSE CONTENT

Unit-I

Algebra

1. Relations and Functions:

Define Set, Ordered pairs, Cartesian product, Relations, functions, domain & range of functions. Describe types of functions (in-to, many-to-one, one-one, onto and bijective) and inverse functions – examples.

2. Partial Fractions:

Define rational, proper and improper fractions of polynomials. Resolve rational fractions in to their partial fractions covering the types mentioned below.

$i)\quad \dfrac{f(x)}{(ax+b)(cx+d)}$ $ii)\quad \dfrac{f(x)}{(ax+b)^2(cx+d)}$

$iii)\quad \dfrac{f(x)}{(x^2+a^2)(bx+c)}$ $iv)\quad \dfrac{f(x)}{(x^2+a^2)(x^2+b^2)}$

3. Matrices:

Definition of a matrix, types of matrices-examples, algebra of matrices-equality of two matrices, sum, scalar multiplication and product of matrices. Transpose of a matrix-Symmetric, skew symmetric matrices-Minor, cofactor of an element-Determinant of a square matrix-Laplace's expansion, properties of determinants. Singular and non-singular matrices-Adjoint and multiplicative inverse of a square matrix- examples-System of linear equations in 3 variables-Solutions by Cramer's rule and Matrix inversion method-examples.

Unit-II

Trigonometry

4. Trigonometric ratios:

Definition of trigonometric ratios of any angle, values of trigonometric ratios at specified values, draw graphs of trigonometric functions, periodicity of trigonometric functions.

5. Compound angles:

Formulas of sin(A±B), cos (A±B), tan(A±B),cot(A±B),and related identities with problems.

6. Multiple and sub multiple angles:

Formulae for trigonometric ratios of multiple angles 2A, 3A and sub multipleangles A/2 with problems.

7. Transformations of products into sums or differences and vice versa simple problems

8. Inverse trigonometric functions:

Definition, domains and ranges-basic properties- problems.

9. Trigonometric equations:

Concept of a solution, principal value and general solution of trigonometric equations: sinx =k ,cosx= k, tanx =k, where k is a constant. Solutions of simple quadratic equations, equations involving usage of transformations- problems.

10.Properties of triangles:

Relation between sides and angles of a triangle- sine rule, cosine rule, tangent rule and projection rule-area of a triangle- problems.

11. Hyperbolic functions:

Definitions of hyperbolic functions, identities of hyperbolic functions, inverse hyperbolic functions and expression of inverse hyperbolic functions in terms of logarithms.

12. Complex Numbers:

Definition of a complex number, Modulus and conjugate of a complex number, Arithmetic operations on complex numbers, Modulus- Amplitude (polar) form , Exponential form (Euler form) of a complex number- Problems. DeMoivre's theorem.

UNIT-III

Coordinate geometry

13 Straight lines: various forms of straight lines, angle between lines, perpendicular distance from a point, distance between parallel lines-examples.

14. Circle: locus of a point, Circle, definition-Circle equation given (i) centre and radius, (ii) two ends of a diameter (iii) centre and a point on the circumference (iv) three non collinear points - general equation of a circle – finding centre, radius.

15. Definition of a conic section, equation of a conic when focus directrix and eccentricity are given. properties of parabola, ellipse and hyperbola in standard forms.

UNIT-IV

Differential Calculus:

16. Concept of Limit- Definition- Properties of Limits and Standard Limits -Simple Problems- Continuity of a function at a point- Simple Examples only.

17. Concept of derivative- Definition (first principle)- different notations-derivatives of elementary functions- problems. Derivatives of sum, product, quotient, scalar multiplication of functions - problems. Chain rule, derivatives of inverse trigonometric functions, derivative of a function with respect to another function, derivative of parametric functions, derivative of hyperbolic, implicit functions, logarithmic differentiation – problems in each case. Higher order derivatives - examples – functions of several variables - partial differentiation, Euler's theorem-simple problems.

UNIT-V

Applications of Derivatives:

18. Geometrical meaning of the derivative, equations of Tangent and normal to a curve at any point. Lengths of tangent, normal, sub tangent and subnormal to the curve at any point - problems.

19. Physical applications of the derivative – velocity, acceleration, derivative as a rate measure –Problems.

20. Applications of the derivative to find the extreme values – Increasing and decreasing functions, finding the maxima and minima of simple functions - problems leading to

applications of maxima and minima.

21. Using the concept of derivative of a function of single variable, find the absolute error, relative and percentage errors and approximate values due to errors in measuring.

Textbook:

Engineering Mathematics-I, a textbook for first year diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. Shanti Narayan, A Textbook of matrices, S.Chand&Co.
2. Robert E. Moyer & Frank Ayers Jr., Schaum's Outline of Trigonometry, 4th Edition, Schaum's Series
3. M.Vygodsky, Mathematical Handbook, Mir Publishers, Moscow.
4. Frank Ayers & Elliott Mendelson, Schaum's Outline of Calculus, Schaum's Series

Engineering Mathematics – I
Blue print

S. No	Chapter/ Unit title	No of Periods		Weightage Allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
	Unit - I : Algebra	**Theory**	**Practice**		**R**	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**	
1	Relations and Functions	4	2	3	0	3	0	0	0	1	0	0	**CO 1**
2	Partial Fractions	3	2	3	0	3	0	0	0	1	0	0	**CO 1**
3	Matrices and Determinants	10	10	11	3	0	8	0	1	0	1	0	**CO 1**
	Unit - II : Trigonometry												
4	Trigonometric Ratios	1	1	0	0	0	0	0	0	0	0	0	**CO2**
5	Compound Angles	3	2	3	3	0	0	0	1	0	0	0	**CO2**
6	Multiple and Submultiple angles	4	4	3	0	3	0	0	0	1	0	0	**CO2**
7	Transformations	3	3	8	0	8	0	0	0	1	0	0	**CO2**
8	Inverse Trigonometric Functions	3	2										
9	Trigonometric Equations	3	2	8	0	0	8	0	0	0	1	0	**CO2**
10	Properties of triangles	3	2										
11	Hyperbolic	1	1	0	0	0	0	0	0	0	0	0	**CO2**

	Functions												
12	Complex Numbers	4	2	3	3	0	0	0	1	0	0	0	**CO2**
	Unit III : Co-ordinate Geometry												
13	Straight Lines	4	2	3	3	0	0	0	1	0	0	0	**CO3**
14	Circle	3	2	8	0	8	0	0	0	1	0	0	**CO3**
15	Conic Sections	8	4										
	Unit – IV : Differential Calculus												
16	Limits and Continuity	4	2	3	0	3	0	0	0	1	0	0	**CO4**
17	Differentiation	17	10	14	3	11	0	0	1	2	0	0	**CO4**
	Unit - V : Applications of Differentiation												
18	Geometrical Applications	3	2	10	0	0	0	10	0	0	0	1	**CO5**
19	Physical Applications	2	2										
20	Maxima and Minima	3	4										
21	Errors and Approximations	2	1										
Total		**89**	**61**	**80**	**15**	**39**	**16**	**10**	**5**	**8**	**2**	**1**	

R: Remembering Type : 15 Marks U: understanding Type : 39 Marks
Ap: Application Type : 16 Marks An: Analysing Type : 10 Marks

Engineering Mathematics – I
Unit Test Syllabus

Unit Test	Syllabus
Unit Test-I	From L.O. 1.1 to L.O. 2.11
Unit Test-II	From L.O. 2.12 to L.O. 3.10
Unit Test-III	From L.O.4.1 to L.O. 5.10

ENGINEERING PHYSICS

Course code	Course Title	No. of Periods per week	Total No. of Periods	Marks for FA	Marks for SA
AA-103	Engineering Physics	4	120	20	80

S. No	Unit Title/Chapter	No of Periods	COs Mapped
1	Units and Dimensions	08	CO1
2	Elements of Vectors	12	CO1
3	Dynamics	12	CO2
4	Friction	10	CO2
5	Work, Power and Energy	12	CO3
6	Simple harmonic motion	12	CO3
7	Heat and Thermodynamics	12	CO4
8	Sound	10	CO4
9	Properties of matter	10	CO5
10	Electricity and Magnetism	12	CO5
11	Modern physics	10	CO5
Total		**120**	

Course Title: Engineering Physics	
Course Objectives	1. To familiarize with the concepts of Physics involved in the process of various Engineering, Industrial and Daily life Applications. 2. To understand and apply the basic principles of physics in the field of engineering and technology to familiarize certain natural phenomenon occurring in the day to day life 3. To reinforce theoretical concepts by conducting relevant experiments/exercises

Course Outcomes	CO1	Explain S.I units and dimensions of different physical quantities, basic operations among vector quantities.
	CO2	Explain the motion of objects moving in one dimension and two dimensions, the causes of motion and hindrance to the motion of the objects especially with respect to friction.
	CO3	Explain the mechanical energy of bodies like PE, KE and conservation law of energy, the properties of simple harmonic motion.
	CO4	Explain gas laws, ideal gas equation, Isothermal and adiabatic processes, Specific heats, to study the laws of thermodynamics. Causes, consequences and methods to minimise noise pollution, explain beats, Doppler effect, Reverberation, echoes.
	CO5	Explain certain properties of solids, liquids like elastic properties, viscosity and surface tension. Explain Ohm's law, to study Kirchoff's laws, to study the principle of Wheatstone's bridge and its application

		to meter bridge. To study the magnetic force and understand magnetic field. To compute magnetic field strength on axial and equatorial lines of a bar magnet. To familiarise with modern topics like photoelectric effect, optical fibres, superconductivity and nanotechnology.

Learning Outcomes

1.0 Concept of Units and dimensions

1.1 Explain the concept of Units, Physical quantity, Fundamental physical quantities and Derived physical quantities

1.2 Define unit, fundamental units and derived units, State SI units with symbols

1.3 State Multiples and submultiples in SI system, State Rules of writing S.I. units, State advantages of SI units

1.4 Define Dimensions, Write Dimensional formulae of physical quantities

1.5 List dimensional constants and dimensionless quantities

1.6 State the principle of homogeneity of dimensions

1.7 State the applications and limitations of dimensional analysis

1.8 Errors in measurement, Absolute error, relative error, percentage error, significant figures

1.9 Solve problems

2.0 Concept of Elements of Vectors

2.1 Explain the concept of scalars, Vectors and give examples

2.2 Represent vectors graphically, Classify the Vectors, Resolve the vectors

2.3 Determine the resultant of a vector by component method, represent a vector in Space using unit vectors (i, j, k)

2.4 State and explain triangle law, parallelogram law, and polygon law of addition of Vectors

2.5 Define Dot product of two vectors with examples (Work done, Power), mention the Properties of dot product

2.6 Define cross product of two vectors with examples (Torque, Linear velocity) Mention the properties of Cross product.

2.7 Solve the related numerical problems

3.0 Concept of Dynamics

3.1 Write the equations of motion in a straight line. Explain the acceleration due to Gravity.

3.2 Explain vertical motion of a body and derive expressions for a) Maximum Height, b) Time of ascent, c) time of descent, and d) time of flight

3.3 Derive height of a tower when a body projected vertically upwards from the top of a tower.

3.4 Explain projectile motion with examples

3.5 Explain horizontal projection and derive an expression for the path of a projectile in horizontal projection

3.6 Explain oblique projection and derive an expression for it. Derive formulae for a) Maximum Height b) time of ascent c) time of descent and d) time of flight e) Horizontal Range, f) Maximum range

3.7 Define force, momentum, angular displacement, angular velocity, angular acceleration, angular momentum, moment of inertia, torque

3.8 Solve the related numerical problems

4.0 Concept of Friction

4.1 Define friction and classify the types of friction.
4.2 Explain the concept of normal reaction.
4.3 State the laws of friction.
4.4 Define coefficients of friction, Angle of friction and angle of repose.
4.5 Derive expressions for acceleration of a body on a rough inclined plane. (Upwards and downwards)
4.6 List the advantages and disadvantages of friction.
4.7 Mention the methods of minimizing friction.
4.8 Explain why it is easy to pull a lawn roller than to push it.
4.9 Solve the related numerical problems.

5.0 Concepts of Work, Power, and Energy

5.1 Define the terms Work, Power and Energy. State SI units and dimensional Formulae.
5.2 Define potential energy and give examples, derive an expression for potential energy.
5.3 Define Kinetic energy and give examples, derive an expression for kinetic energy.
5.4 State and derive Work-Energy theorem.
5.5 Derive the relation between Kinetic energy and momentum.
5.6 State the law of conservation of energy and verify it in the case of a freely falling body.
5.7 Solve the related numerical problems.

6.0 Concepts of Simple harmonic motion

6.1 Define Simple harmonic motion, Give examples, state the conditions.
6.2 Explanation of uniform circular motion of a particle is a combination of two perpendicular S.H.M.s.
6.3 Derive expressions for displacement, velocity, acceleration, Frequency, Time period of a particle executing SHM.
6.4 Define phase of SHM.
6.5 Define Ideal simple pendulum and derive expression for time period of simple pendulum.
6.6 State the laws of motion of simple pendulum.
6.7 Solve the related numerical problems.

7.0 Concept of heat and thermodynamics

7.1 Explain the concept of expansion of gases
7.2 State and explain Boyle's and Charles laws.
7.3 Define absolute zero temperature, absolute scale of temperature
7.4 Define ideal gas and distinguish from real gas
7.5 Derive Ideal gas equation. Define specific gas constant and universal gas constant, write S.I unit and dimensional formula. Calculate the value of R.
7.6 Explain why universal gas constant is same for all gases
7.7 State and explain isothermal process and adiabatic process
7.8 State first and second laws of thermodynamics and state applications
7.9 Define specific heats and molar specific heats of a gas, Derive C_P-C_V =R
7.10 Solve the relevant numerical problems

8.0 Concept of Sound

8.1 Concept of the sound, Wave motion. (longitudinal and transverse wave)
8.2 Distinguish between musical sound and noise.
8.3 Explain noise pollution and state SI unit for intensity level of sound.

8.4 Explain causes, effects and methods of minimizing of noise pollution.
8.5 Explain the phenomenon of beats state the applications.
8.6 Define Doppler effect, list the applications.
8.7 Define reverberation and reverberation time and write Sabine's formula.
8.8 Define and explain echoes state its applications.
8.9 State conditions of good auditorium.
8.10 Solve the related numerical problems.

9.0 Concepts of properties of matter

9.1 Explain the terms elasticity, stress, strain and types of stress and strain.
9.2 State and explain Hooke's law.
9.3 Definitions of Modulus of elasticity, Young's modulus(Y), Bulk modulus (K), Rigidity modulus (n),Poisson's ratio (σ),
9.4 Define surface tension and give examples.
9.5 Explain Surface tension with reference to molecular theory.
9.6 Define angle of contact and capillarity and write formula for Surface Tension.
9.7 Explain the concept of viscosity, give examples, write Newton's formula.
9.8 Define co-efficient of viscosity and write its units and dimensional formula and State Poiseulle's equation for Co-efficient of viscosity.
9.9 Explain the effect of temperature on viscosity of liquids and gases.
9.10 Solve the related numerical problems.

10. Concepts of Electricity and Magnetism

10.1 Explain Ohm's law in electricity and write the formula.
10.2 Define specific resistance, conductance and state their units.
10.3 Explain Kirchoff's laws.
10.4 Describe Wheatstone's bridge with legible sketch.
10.5 Describe Meter Bridge for the determination of resistivity with a circuit diagram.
10.6 Explain the concept of magnetism. State the Coulomb's inverse square law of Magnetism.
10.7 Define magnetic field and magnetic lines of force and write the properties of magnetic lines of force.
10.8 Derive an expression for the moment of couple on a bar magnet placed in a uniform magnetic field.
10.9 Derive equations for Magnetic induction field strength at a point on the axial line and on the equatorial line of a bar magnet.
10.10 Solvethe related numerical problems

11.0 Concepts of modern physics

11.1 State and explain Photo-electric effect and Write Einstein's photo electric Equation.
11.2 State laws of photo electric effect.
11.3 Explain the Working of photo electric cell, write its applications.
11.4 Recapitulation of refraction of light and its laws, critical angle, total Internal Reflection.
11.5 Explain the principle and working of Optical fiber, mention different types of Optical fiber, state the applications.
11.6 Define super conductor and super conductivity and mention examples.
11.7 State the properties of super conducting materials and list the applications.
11.8 Nanotechnology definition, nano materials, applications.

COURSECONTENT

1. **Units and Dimensions**:
   Introduction, Physical quantity, Fundamental and Derived quantities, Fundamental and Derived units, SI units, Multiples and Sub multiples, Rules for writing S.I. units, Advantages of SI units. Dimensions and Dimensional formulae, Dimensional constants and Dimensionless quantities, Principle of homogeneity, Advantages and limitations of dimensional analysis, Errors in measurement, Absolute error, relative error, percentage error, significant figures, Problems.
2. **Elements of Vectors**:
   Scalars and Vectors, Types of vectors (Proper Vector, Null Vector, Unit Vector, Equal, Negative Vector, Like Vectors, Co-Initial Vectors, Co-planar Vectors and Position Vector).Addition of vectors, Representation of vectors, Resolution of vectors, Parallelogram, Triangle and Polygon laws of vectors, Subtraction of vectors, Dot and Cross products of vectors-Problems.
3. **Dynamics**
   Introduction-Concept of acceleration due to gravity-Equations of motion for a freely falling body and for a body thrown up vertically- Projectiles- Horizontal and Oblique projections- Expressions for maximum height, time of flight, range-Define force, momentum, angular displacement, angular velocity, angular acceleration, angular momentum, moment of inertia, torque–problems.
4. **Friction:**
   Introduction to friction- Causes- Types of friction- Laws of friction- Angle of repose-Angle of friction- rough inclined plane- Advantages and disadvantages of friction-Methods of reducing friction–Problems.
5. **Work, Power and Energy:**
   Work, Power and Energy- Definitions and explanation- potential energy- kinetic energy- Derivations of Potential and Kinetic energies-K.E and Momentum relation - Work-Energy theorem- Law of Conservation of energy- Problems.
6. **Simple Harmonic Motion:**
   Introduction- Conditions of SHM- Definition- Examples- Expressions for displacement, velocity, acceleration, Time period, frequency and phase in SHM- Time period of a simple pendulum- Laws of simple pendulum-seconds pendulum-Problems.
7. **Heat and Thermodynamics:**
   Expansion of Gases, Boyle's law, absolute scale of temperature- Charles laws- Ideal gas equation- Universal gas constant- Differences between gas constant(r) and universal gas constant(R), Isothermal and adiabatic processes, Laws of thermodynamics, Specific heats - molar specific heats of a gas -Different modes of transmission of heat, laws of thermal conductivity, Coefficient of thermal conductivity-Problems.
8. **Sound:**
   Sound- Nature of sound- Types of wave motion -musical sound and noise- Noise pollution – Causes &effects- Methods of reducing noise pollution- Beats- Doppler effect- Echo- Reverberation-Reverberation time-Sabine 's formula-Conditions of good auditorium- Problems.
9. **Properties of matter**
   Definition of Elasticity –Definition of stress and strain -the units and dimensional formulae for stress and strain-The Hooke's law-Definitions of Modulus of elasticity, Young's modulus(Y), Bulk modulus(K), Rigidity modulus (n),Poisson's ratio (σ), relation between Y, K, n and σ(equations only no derivation)

Definition of surface tension-Explanation of Surface tension with reference to molecular theory - Definition of angle of contact -Definition of capillarity -The formula for surface tension based on capillarity - Explanation of concept of Viscosity - Examples for surface tension and Viscosity - Newton's formula for viscous force- Definition of co-efficient of viscosity- The effect of temperature on viscosity of liquids and gases - Poiseuille's equation for Co-efficient of viscosity- The related numerical problems.

10. Electricity & Magnetism:

Ohm's law and explanation, Specific resistance, Kirchoff's laws, Wheatstone's bridge, Meter bridge, Coulomb's inverse square law, magnetic field, magnetic lines of force, magnetic induction field strength- magnetic induction field strength at a point on the axial line - magnetic induction field strength at a point on the equatorial line– problems.

11. Modern Physics;

Photoelectric effect –Einstein's photoelectric equation-laws of photoelectric effect-photoelectric cell–Applications of photo electric effect- Total internal reflection- fiber optics- -principle and working of an optical fiber-types of optical fibers - Applications of optical fibers- superconductivity–applications-Nanotechnology definition, nano materials, applications

REFERENCEBOOKS

1. Telugu Academy (English version) Intermediate physics Volume-I & 2
2. Dr. S. L. Guptha and Sanjeev Guptha Unified physics Volume 1,2,3 and 4
3. Resnick& Holiday Text book of physics Volume I
4. Dhanpath Roy Text book of applied physics
5. D.A Hill Fiber optics
6. XI & XII Standard NCERT Text Books

➢ **Model Blue Print with Weightage for Blooms category and questions for chapter and Cos mapped**

S. No	Unit Title/Chapter	No of Periods	Weightage of marks	Marks wise distribution of Weightage				Question wise distribution of Weightage				Mapped with CO
				R	U	Ap	An	R	U	Ap	An	
1	Units and Dimensions	08	03	3	0	0	0	1	0	0	0	CO1
2	Elements of Vectors	12	11	3	8	0	0	1	1	0	0	CO1
3	Dynamics	12	11	3	8	0	0	1	1	0	*	CO2
4	Friction	10	11	3	0	8	0	1	0	1	0	CO2
5	Work, Power and Energy	12	11	3	8	0	0	1	1	0	0	CO3
6	Simple harmonic motion	12	11	3	8	0	0	1	1	0	*	CO3
7	Heat and Thermodynamics	12	11	0	8	3	0	0	1	1	*	CO4

8	Sound	10	11	0	8	3	0	0	1	1	0	CO4
9	Properties of matter	10	08	0	8	0	0	0	1	0	0	CO5
10	Electricity and Magnetism	12	14	6	0	8	0	2	0	1	0	CO5
11	Modern physics	10	08	0	8	0	0	0	1	0	0	CO5
Total		**120**	**110**	**24**	**64**	**22**	**0**	**8**	**8**	**4**	***10**	

***One question of HOTs for 10 marks from any of the unit title 3 or 6 or 7**

- **Table specifying the scope of syllabus to be covered for Unit Tests**

Unit Test	**Learning outcomes to be covered**
Unit Test – 1	From 1.1 to 4.9
Unit Test – 2	From 5.1 to 7.10
Unit Test – 3	From 8.1 to 11.8

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

Course code	Course Title	No. of Periods per week	Total No. of Periods	Marks for FA	Marks for SA
AA-104	Engineering Chemistry and Environmental Studies	4	120	20	80

S.No	Unit Title/Chapter	No of Periods	COs Mapped
1	Fundamentals of Chemistry	18	CO1
2	Solutions	10	CO1
3	Acids and bases	10	CO1
4	Principles of Metallurgy	8	CO1
5	Electrochemistry	16	CO2
6	Corrosion	8	CO2
7	Water Treatment	10	CO3
8	Polymers	12	CO4
9	Fuels	6	CO4
10	Chemistry in daily life	6	CO4
11	Environmental Studies	16	CO5
	Total	**120**	

- **Course Objectives**

Course Title: Engineering Chemistry & Environmental Studies	
Course Objectives	1. To familiarize with the concepts of chemistry involved in the process of various Engineering Industrial Applications. 2. To know the various natural and man-made environmental issues and concerns with an interdisciplinary approach that include physical, chemical, biological and socio cultural aspects of environment. 3. To reinforce theoretical concepts by conducting relevant experiments/exercises

- **Course outcomes**

Course Outcomes	CO1	Explain Bohr`s atomic model, chemical bonding, mole concept, acids and bases, P^H metallurgical process and alloys
	CO2	Explain electrolysis, Galvanic cell, emf and corrosion
	CO3	Explain the chemistry involved in the treatment of water by advanced method
	CO4	Synthesise of Plastics, rubber and applications of fuel chemical compounds used in our daily life.
	CO5	Explain the causes, effects and control methods of air and water pollution and measures to protect the environment

➢ **Model Blue Print with Weightage for Blooms category and questions for each chapter and COs mapped**

S.No	Unit Title/Chapter	No of Periods	Weightage of marks	Marks wise distribution of Weightage				Question wise distribution of Weightage				Mapped with CO
				R	U	Ap	An	R	U	Ap	An	
1	Fundamentals of Chemistry	18	19	8	8	3		1	1	1		CO1
2	Solutions	10	11	0	0	8	3			1	1	CO1
3	Acids and bases	10	11	0	8	0	3		1		1	CO1
4	Principles of Metallurgy	8	8	8	0	0		1				CO1
5	Electrochemistry	16	11	8	3	0		1	1		*	CO2
6	Corrosion	8	8	0	8	0			1			CO2
7	Water Treatment	10	11	8	3	0		1	1			CO3
8	Polymers	12	11	3	8	0		1	1		*	CO4
9	Fuels	6	3	3	0	0		1				CO4
10	Chemistry in daily life	6	3	0	0	3				1		CO4
11	Environmental Studies	16	14	3	11	0		1	2			CO5
Total		**120**	**110**	**12**	**6**	**6**	**6**	**20**	**35**	**5**	***10**	

***One question of HOTs for 10 marks from any of the unit title 5 or 8**

Upon completion of the course the student shall be able to learn out

ENGINEERINGCHEMISTRY AND ENVIRONMENTAL STUDIES

1.0 Atomic structure

1.1 Explain the charge, mass of fundamental particles of an atom (electron, proton and neutron) and the concept of atomic number and mass number.

1.2 State the Postulates of Bohr's atomic theory and its limitations.

1.3 Explain the significance of four Quantum numbers.

1.4 Explain1.Aufbau principle, 2 Pauli's exclusion principle 3 Hund's rule.

1.5 Define Orbital of an atom and draw the shapes of s, p and d- Orbitals.

1.6 Write the electronic configuration of elements up to atomic number 30

1.7 Explain the significance of chemical bonding

1.8 Explain the Postulates of Electronic theory of valency

1.9 Define and explain Ionic and Covalent bonds with examples of NaCl , MgO, $*H_2$,$*O_2$ and $*N_2$. (* Lewis dot method)

1.10 List out the Properties of Ionic compounds and covalent compounds and distinguish between their properties.

1.11 Structures of ionic solids-define a) Unit cell b) co-ordination number and the structures of NaCl and CsCl unit cells.

2.0 Solutions

2.1 Define the terms 1.Solution, 2.Solute and 3.Solvent
2.2 Classify solutions based on physical state and solubility
2.3 Define mole and problems on mole concept.
2.4 Define the terms 1. Atomic weight, 2.Molecular weight and 3. Equivalent weight and calculate Molecular weight and Equivalent weight of the given acids.(HCl,H_2SO_4,H_3PO_4)Bases (NaOH, $Ca(OH)_2$, $Al(OH)_3$) and Salts (NaCl, Na_2CO_3, $CaCO_3$)
2.5 Define molarity and normality and numerical problems on molarity and normality a) Calculate the Molarity or Normality if weight of solute and volume of solution are given b) Calculate the weight of solute if Molarity or normality with volume of solution are given c) Problems on dilution to convert high concentrated solutions to low concentrated Solutions

3.0 Acids and bases

3.1 Explain Arrhenius theory of Acids and Bases and give the limitations of Arrhenius theory of Acids and Bases.
3.2 Explain Bronsted–Lowry theory of acids and bases and give the limitations of Bronsted–Lowry theory of acids and bases.
3.3 Explain Lewis theory of acids and bases and give the limitations of Lewis theory of acids and bases.
3.4 Explain the Ionic product of water
3.5 Define pH and explain P^H scale and solve the Numerical problems on pH(Strong Acids and Bases)
3.6 Define and explain buffer solution and give the examples of buffer solutions.
3.7 State the application of buffer solutions

4.0 Principles of Metallurgy

4.1 List out the Characteristics of Metals and non-metals
4.2 Distinguish between Metals and Non-metals
4.3 Define the terms1.Mineral, 2.Ore, 3. Gangue, 4.Flux5.Slag
4.4 Describe the methods of concentration of Ore; 1.Handpicking, 2.Levigation and 3. Froth Floatation
4.5 Describe the methods involved in extraction of crude metal- Roasting, Calcination and Smelting.
4.6 Explain the purification of Copper by Electrolytic Refining
4.7 Define an Alloy and Write the composition and uses of the following alloys. 1. Brass 2. Germen silver 3. Nichrome.

5.0 Electrochemistry

5.1 Define the terms1. Conductor 2. Semiconductor 3. Insulator, 4.Electrolyte5.Non–electrolyte. Give two examples each.
5.2 Distinguish between metallic conduction and Electrolytic conduction
5.3 Explain electrolysis by taking example fused NaCl
5.4 Explain Faraday's laws of electrolysis
5.5 Define1.Chemical equivalent (E) 2. Electrochemical equivalent (e) and their relation.
5.6 Solve the Numerical problems on Faraday's laws of electrolysis and applications of electrolysis (Electro plating)
5.7 Define Galvanic cell and explain the construction and working of Galvanic cell.
5.8 Distinguish between electrolytic cell and galvanic cell
5.9 Explain the electrode potentials and standard electrode potentials
5.10 Explain the electrochemical series and its significance
5.11 Explain the emf of a cell and solve the numerical problems on emf of the cell based on

standard electrode potentials.

6.0 Corrosion

6.1 Define the term corrosion.

6.2 state the Factors influencing the rate of corrosion

6.3 Describe the formation of a) composition cell b) stress cell c)concentration cell during corrosion.

6.4 Define rusting of iron and explain the mechanism of rusting of iron.

6.5 Explain the methods of prevention of corrosion
a)Protective coatings (anodic and cathodic coatings)
b) Cathodic protection (Sacrificial anode process and Impressed–voltage process)

7. 0 Water Treatment

7.1 Define soft water and hard water with respect to soap action.

7.2 Define and classify the hardness of water.

7.3 List out the salts that causing hardness of water (with Formulae)

7.4 State the disadvantages of using hard water in industries.

7.5 Define Degree of hardness and units of hardness (mg/L) or(ppm).

7.6 Explain the methods of softening of hard water: a) Ion-exchange process, b)Permutit process or zeolite process

7.7 State the essential qualities of drinking water.

7.8 Chemistry involved in treatment of water (Coagulation, Chlorination, deflouridation)

7.9 Explain Osmosis and Reverse Osmosis with examples.

7.10 State the applications of Reverse Osmosis.

8.0 Polymers

8.1 Explain the concept of polymerization

8.2 Describe the methods of polymerization a)addition polymerization of ethylene
b)condensation polymerization of Bakalite (Only flow chart)

8.3 Define thermoplastics and thermosetting plastics with examples.

8.4 Distinguish between thermo plastics and thermosetting plastics

8.5 List the Characteristics of plastics and state the disadvantages of using plastics.

8.6 State the advantages of plastics over traditional materials.

8.7 Explain the methods of preparation and uses of the following plastics:
1. PVC, 2.Teflon, 3. Polystyrene 4. Nylon 6,6

8.8 Explain processing of Natural rubber and write the structural formula of Natural rubber.

8.9 List the Characteristics of raw rubber

8.10 Define and explain Vulcanization and List out the Characteristics of Vulcanized rubber.

8.11 Define the term Elastomer and describe the preparation and uses of the following synthetic rubbers a) Buna-s and b)Neoprene rubber.

9.0 Fuels

9.1 Define the term fuel

9.2 Classify the fuels based on physical state and based on occurrence.

9.3 List the characteristics of good fuel.

9.4 State the composition and uses of gaseous fuels.
a)water gas b) producer gas, c) natural gas, d) Coal gas, e)Biogas.

10.0 Chemistry in daily life

10.1 Give the basic chemical composition, applications, health aspects and pollution impacts of a) soaps, and detergents b) vinegar c) Insect repellents d) activated charcoal e) Soft drinks

11.0 ENVIRONMENTALSTUDIES

11.1 Define the term environment and explain the scope and importance of environmental studies

11.2 Define the segments of environment
1) Lithosphere, 2) Hydrosphere, 3).Atmosphere, 4).Biosphere,

11.3 Define the following terms 1)Pollutant, 2).Pollution, 3).Contaminant, 4)receptor, 5)sink, 6) particulates, 7) dissolved oxygen (DO), 8)Threshold limit value (TLV), 9).BOD,10).COD 11) eco system 12) Producers 13) Consumers 14) Decomposers with examples

11.4 State the renewable and non-renewable energy sources with examples.

11.5 Explain biodiversity and threats to biodiversity

11.6 Define air pollution and classify the air pollutants-based on origin and physical state of matter.

11.7 Explain the causes, effects of air pollution on human beings, plants and animals and control methods of air pollution.

11.8 State the uses of forest resources.

11.9 Explain causes and effects of deforestation

11.10 Explain the causes and effects of the following
1.) Greenhouse effect, 2) Ozone layer depletion and 3) Acid rain

11.11 Define Water pollution, explain the causes, effects and control methods of Water pollution.

COURSE CONTENT

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

1. Fundamentals of Chemistry

Atomic Structure: Introduction - Fundamental particles – Bohr's theory – Quantum numbers –Aufbau principle - Hund's rule - Pauli's exclusion Principle- Orbitals, shapes of s, p and d orbitals - Electronic configurations of elements

Chemical Bonding: Introduction – types of chemical bonds – Ionic and covalent bond with examples–Properties of Ionic and Covalent compounds- structures of ionic crystals (NaCl and CsCl).

2. Solutions

Introduction of concentration methods – mole concept, molarity and normality – Numerical problems on mole, molarity and normality.

3. Acids and Bases

Introduction – Theories of acids and bases and limitations – Arrhenius theory- Bronsted –Lowry theory – Lewis acid base theory – Ionic product of water- PH related numerical problems–Buffer solutions, action of buffer and its applications.

4. Principles of Metallurgy

Characteristics of Metals and non-metals –Distinguish between Metals and Non-metals, Define the terms i) Metallurgy ii) ore iii) Gangue iv) flux v) Slag - Concentration of Ore – Hand picking, Levigation, Froth floatation – Methods of Extraction of crude Metal – Roasting, Calcination, Smelting – Alloys – Composition and uses of brass, German silver and nichrome.

5. Electrochemistry

Conductors, semiconductors, insulators, electrolytes and non-electrolytes – electrolysis – Faraday's laws of electrolysis-application of electrolysis(electroplating) - numerical problems on Faraday's laws – Galvanic cell – standard electrode potential – electrochemical series–EMF and numerical problems on EMF of a cell .

6. Corrosion

Introduction - factors influencing corrosion - composition, stress and concentration cells–rusting of iron and its mechanism – prevention of corrosion by coating methods, cathodic protection methods.

7. Water technology

Introduction–soft and hard water–causes of hardness–types of hardness –disadvantages of hard water – degree of hardness (ppm and mg/lit) – softening methods – permutit process – ion exchange process– qualities of drinking water – Chemistry involved in treatment of water (Coagulation, Chlorination, deflouridation) - Osmosis, Reverse Osmosis –Applications of Reverse osmosis.

8. Polymers

Introduction – polymerization – types of polymerization – addition, condensation with examples – plastics – types of plastics – advantages of plastics over traditional materials-Disadvantages of using plastics – Preparation and uses of the following plastics i).PVC ii) Teflon iii) Polystyrene iv) Nylon 6,6 –Processing of natural rubber - Vulcanization – Elastomers- Preparation and applications of Buna-s, Neoprene rubbers.

9. Fuels

Definition and classification of fuels–characteristics of good fuel-composition and uses of gaseous fuels.

10. Chemistry in daily life

Basic composition, applications, health aspects and pollution impacts of soaps and detergents, vinegar, insect repellents, soft drinks, activated charcoal.

11. ENVIRONMENTALSTUDIES

Introduction– environment –scope and importance of environmental studies – important terms related to environment– renewable and non-renewable energy sources–Concept of ecosystem – Biotic components –Forest resources – Deforestation -Biodiversity and its threats-Air pollution – causes-effects–Global environmental issues – control measures – Water pollution – causes – effects – control measures.

REFERENCEBOOKS

1. Telugu Academy Intermediate chemistry Vol 1&2
2. Jain & Jain Engineering Chemistry
3. O.P. Agarwal, Hi- Tech. Engineering Chemistry
4. Sharma Engineering Chemistry
5. A.K. De Engineering Chemistry

Table specifying the scope of syllabus to be covered for unit test 1, unit test 2 and unit test 3

Unit Test	**Learning outcomes to be covered**
Unit Test – 1	From 1.1 to 3.7
Unit Test – 2	From 4.1 to 7.10
Unit Test – 3	From 8.1 to 11.11

BUILDINGMATERIALS(C-20)

Subject Title	Subject Code	Periods/Week	Periods/Year
Building Materials	AA-105	04	120

CO no	Topic	Course Outcomes
CO1	AA-105.1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 & 13	Understand and communicate with clients and related stakeholders in serving and specifying adequate and suitable material for such work of the building and construction while conveying their properties, durability and application methodology.
CO2	AA-105.6, 10, 12, 13 &14	Apply the knowledge in serving the profession and job, matching to the prevailing industry and latest needs while experimenting with new / equivalent / substitute / better than the conventional materials.
CO3	AA-105.2, 6, 8, 11 & 13	Serve the clients and society by adopting and maintaining the standards specified and prescribed by ISI and ISO.
CO4	AA-105.1, 5, 11, 12, 13 &14	Specify suitable material for needful solution and improvising the quality of building construction, appearance, rendering while maintaining standards and cost-effective techniques.
CO5	AA-105. 14	Acquire knowledge of modern or latest materials available in the building material market to face and solve various cropping challenges in construction, satisfying the clients' needs for various building planning requirements.
CO6	AA-105.1, 2, 3, 4, 5, 9, &11	Serves the profession through educating and making the clients aware of the importance of natural sources of various materials and their scarcity to implement the environment friendly and maintain the ecological balance.
CO7	AA-105.1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13& 14	Having experienced the specimen material collected during the course work period understanding their properties, cost and limitations is adding power of confidence for their application and specifying the suitable materials serving through professional practice or being an employee at an architect's office or in a construction agency which practises a lifelong learning and serving.

COURSE OBJECTIVES and OUTCOMES

	(i)	To understand the need to know and learn the course to communicate to the stake holders such as clients, contractors, masons, workers and materials traders.
	(ii)	To define, describe, explain the properties, know the uses of the materials which are used for construction of main structure and appurtenant components i.e., Stones, Bricks, Lime, Clay Products, Sand, Cement, Mortars, Concrete.

Course Objectives	(iii)	To understand the rendering material used for interior and exterior of buildings along with their characteristics i.e., of Timber, Glass, Metals, Various Paints, Varnishes and Plastics, Modern Materials.
	(iv)	To comprehend the knowledge of each building material in detail which are used for conventional and non-conventional with their source, other forms, by-products and substitutes wherever it is possible.
	(v)	To understand the scope and limitations of the building materials i.e., Stones, Bricks, Lime, Clay Products, Sand, Cement, Mortars, Concrete, Timber, Glass, Metals, Various Paints, Varnishes and Plastics, Modern Materials.
	(vi)	To collect the material specimen so to gain experience perception of its touch, color, smell, physical form, texture, quality, availability, cost etc.
Course Outcomes	CO1	Understand and communicate with clients and related stakeholders in serving and specifying adequate and suitable material for such work of the building and construction while conveying their properties, durability and Application methodology.
	CO2	Apply the knowledge in serving the profession and job, matching to the prevailing industry and latest needs while experimenting with new / Equivalent / substitute/ better than the conventional materials.
	CO3	Serve the clients and society by adopting and maintaining the standards Specified and prescribed by ISI and ISO.
	CO4	Specify suitable material for needful solution and improvising the quality of building construction, appearance, rendering while maintaining standards and cost-effective techniques.
	CO5	Acquire knowledge of modern or latest materials available in the building material market to face and solve various cropping challenges in construction, satisfying the clients' needs for various building planning requirements.
	CO6	Serves the profession through educating and making the clients aware of the importance of natural sources of various materials and their scarcity to Implement the environment friendly and maintain the ecological balance.
	CO7	Having experienced the specimen material collected during the course work period understanding their properties, cost and limitations is adding power of confidence for their application and specifying the suitable materials serving through professional practice or being an employee at an architect's office or in a construction agency which practices a lifelong learning and serving.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	Part-A No of short ans. questions	Part-B No of Essay ans. questions	Part-C Question
1.	Stones	08	03	1	-	1
2.	Bricks	10	08	-	1	
3.	Lime	08	03	1	-	
4.	Clay Products	10	03	1	-	
5.	Sand	06	03	1	-	
6.	Cement	08	08	-	1	
7.	Mortars	08	03	1	-	
8.	Concrete	10	08	-	1	
9.	Timber and Timber Products	10	03	1	-	
10.	Glass	06	03	1	-	
11.	Metals	08	03	1	-	
12.	Paints & Varnishes	08	03	1	-	
13.	Plastics	08	08	-	1	
14.	Modern Materials	12	11	1	1	
	From all the above topics		10			
Total:		**120**	**80**	**10**	**5**	**1**

Note on Examination:-

Part-A: 30 marks, 10 questions - 3 marks each, **NO CHOICE** - 60 minutes (6 Minutes for each question)

Part-B: 40 marks, 5 questions - 8 marks each, **EITHER OR TYPE** - 90 minutes (18 Minutes each question)

Part-C:10marks1question-30minutes **(Higher Order Question)**

Note: The subject teachers have to organize a practical assignment which enables the all the students in gaining the knowledge by touch the material and experience it physically for which the following modalities are to be followed:-

1. Subject teacher has to make students in to batches comprising minimum three and maximum five for each batch.
2. Each batch of students have to be entrusted to collect the material specimens mentioned in the course content sharing equally from various sources (shops, source productions, factories, markets, whole sale and retail dealers.
3. All such Specimen o be deposited in the Building materials display Room or laboratory.
4. Material display room to be made accessible to all students to perceive the material collected by other batches and students of the course.
5. Material display room to be in the control of the HoS / Archor with Subject teacher.

6. For said Collection of specimen material job the students are to be permitted with required permission letter processed through Subject teacher, HoS, Principal and to be permitted only on Second Saturdays within the vicinity of the town where their institution is existing.

LEARNINGOUTCOMES:

On completion of the course the student will be able to

1.0 Stones:-

State the characteristics of good building Stones
State the common varieties of stones used in different items of construction works
Explain the purpose of dressing of stones
Know the uses of different type of stones for building construction and interiors

2.0 Bricks:-

State the ISI specifications of bricks IS-1077-1971
State the Characteristics of good bricks
State the Uses and properties of(i)Refractory bricks, (ii) Fal G Bricks
State the uses(i) Hollow concrete blocks &(ii)Cement mortar bricks embedded with stone

3.0 Lime:-

Define and explain the terms–(i)Slaking,(ii)Hydraulicity and(iii) Calcination
State the Properties and uses of(i)Fat lime and(ii)Hydraulic lime

4.0 Clay Products:-

State the Types & Uses of (i) Roofing tiles (Mangalore tiles only),
(ii) Floor tiles, (iii) Ceiling tiles, (iv)Wall tiles
State the Characteristics of good tiles.
know the Stone ware pipes and their Uses
know the Porcelain glazed tiles and their uses.
know Vitreous Tiles and their uses.

5.0 Sand:-

State the classification of sand.
State the characteristics of sand.
State the uses of good sand.
State the percentage of bulk allowance for construction work.
State the necessity of crushed stone powder as a substitute of sand.

6.0 Cement:-

List the ingredients of Cement.
State the classification of Cement and their uses.
State the characteristics of ordinary Portland cement.
State the grades of cement and their compressive strengths.
State the importance of Blended cement and its application
(mixture of Fly ash or Furnace slag).

7.0 Mortars:-

State the classification and uses of various mortars.
State the different proportions of mortars for various works.
Explain the methods of preparation of cement mortars.
State the characteristics of good mortar.

8.0 Concrete:-

State the Ingredients of plain concrete and Reinforced concrete

Explain the Proportioning – Usual proportions for different item of works – Foundations, Columns, slabs, beam for ordinary buildings.
Define(i)Fine Aggregate,(ii)Coarse Aggregate and(iii)Workability.
Explain the terms–(i)Hydration of cement,(ii)water cement Ratio.
Know the Methods of preparation of concrete and advantages of (i) Hand Mix, (ii) Machine Mix
understand the Laying and Curing of concrete
Know the Properties of concrete
Know the preparation and application of ready-mix concrete and its advantages
Understand the Light Weight Concrete its application

9.0 Timber &Timber Products:-

State the characteristics of good timber
State the importance of seasoning and define preservation of timber
Identify and Name the common varieties of trees in A.P, used for building construction and Interiors.
State the uses of wood products in construction work

10.0 Glass:-

State the important uses of glass
State the types of glasses available in market and their uses

11.0 Metals

State the uses of Copper, Lead, Zinc ,Aluminum, CastIron, and Brass, Steel, Stainless steel.
State the characteristics and uses of the above metals.

12.0 Paints & Varnishes:-

know the Characteristics of Paints –Varnishes.
Know the Different types of paints on different wall surfaces – (i) White cement, (ii) Cement Primer,(iii) Oil bound distempers, (iv)Emulsion Paints.
State(i)Paints applied on Metals,(ii)Powder coated paints
Paints applied on woodwork–(i)oil paints,(ii) plastic emulsions, (i) Varnishes, (ii) Polyurethane coating, (iii) Touch wood, (iv) Wood seals, (v) Melamine finishes.(vi)Antifungal &(vii)Anti corrosive paints

13.0 Plastics:-

State the characteristics and uses of different types of Plastics–(i)Fibre plastics, (ii) Reinforced plastics, (iii) Plastics for doors and windows (PVC form), (iv) Plastics for water tanks(v)Plastics for False Ceilings
Understand and know application of Thermo setting and Thermo dynamic Plastics

14.0 Modern Materials: -

Gain the knowledge of (i) Thermo Cole, (ii) Plaster of Paris (POP), (iii) Gypsum Boards, (iv)Aluminum Elevation sheets, (v) Aluminum composite panels, (vi) Polycarbonate sheets,(vii) Glasswool, (viii)Fiber-glass,(ix)Wallpaper,(x)Cement Boards,(xi)Cork boards,
(xii)Rubber sheets,(xiii)Tensile Roofing,
Understand the application or Use of above materials in Building Construction.

COURSECONTENTS

1.0 STONES:

Classification of stones
Characteristics of good building stone.
Common Varieties of stones – (i) Granites, (ii) Marble, (iii) Cuddaph-slabs, (iv) Shahabad stones,(v) sandstone,(vi)limestone.
Dressing of stones –purpose and uses.

2.0 BRICKS:

ISI specifications of bricksIS-1077-1971.
Characteristics of good bricks.
Uses and properties of (i)Refractory bricks,(ii)FalG Bricks.
(i)Hollow concrete blocks&(ii) Cement mortar bricks embedded with stone.

3.0 LIME:

Definition for the terms–(i)Slaking,(ii)Hydraulicity and(iii)Calcination.
Properties and uses of(i)Fat lime and(ii)Hydraulic lime.

4.0 CLAYPRODUCTS:

Tiles – Types & Uses – (i) Roofing tiles (Mangalore tiles only), (ii) Floor tiles, (iii) Ceiling tiles,(iv)Wall tiles.
Characteristics of good tiles.
Stone ware pipes–Uses.
Porcelain glazed tiles.
Vitreous Tiles.

5.0 SAND:

Classification of sand:(i)River sand,(ii)Pit sand and(iii)Sea Sand.
Characteristics of the above sands.
Bulking of sand–Percentage of bulk age allowance to be permitted.
Crushed stone powder as substitute of sand.

6.0 CEMENT:

Ingredients of Cement
Classification of Cement–(i)Ordinary Portland cement,(ii)Quick setting cement, (iii)Rapid hardening cement,(iv)White cement,(v)Colored cement.
Grades of cements, their strength &uses.
Blended cement(it is a mixture of Fly ash or Furnace slag) and its application.

7.0 MORTARS:

Classification and uses of Mortars–(i)Mud Motor,(ii)Lime Mortar,(iii) Cement Mortar, (iv)Surkhi Mortar,(v)Blended mortar,(vi)Gauged,(vii)Gypsum.
Different proportions of ingredients in cement mortars for various works.
Preparation of cement Mortar.
Brick laying Mortar and Finishing Mortars.

8.0 CONCRETE:

Ingredients of plain concrete and Reinforced concrete.
Proportioning – Usual proportions for different item of works – Foundations, Columns, slabs, beams for ordinary buildings.
(i)Define Fine Aggregate,(ii)Coarse Aggregate and(iii)Workability.

(i)Hydration of cement,(ii)water cement Ratio.
Methods of preparation of concrete–(i)Hand Mix, (ii)Machine Mix.
Laying and Curing of concrete.
Properties of concrete
Introduction to ready mix concrete.
Light Weight Concrete its uses.

9.0 TIMBERANDTIMBERPRODUCTS:

Characteristics of good timber.
Seasoning of timber–Importance
Common varieties of timber used for different works (such as Doors, Windows, Frame work, Centering, Flooring and Cladding, Furniture, etc.).
Wood Products – (i) Veneer, (ii) Ply wood, (iii) Particle Board, (iv) Laminated Board, (v)Strawboard and their uses.

10.0 GLASS:

Properties and uses of glasses.
Types and uses of glass available in market–(i)Soda lime glass, (ii)Sheet glass,(iii) Glass bricks, (iv)Fibre glass,(v) Structural glass, (vi)Wired glass and
(vii)Bullet proof glass.

11.0 METALS:

Properties and Uses of – (i) Copper, (ii) Aluminium, (iii) Cast – Iron, (iv) Brass,(v) Steel&(vi)Stainless steel.
Usage of the above metals in Building Construction.

12.0 PAINTSANDVARNISHES:

Characteristics of Paints –Varnishes.
Different types of paints on different wall surfaces – (i) White cement,(ii) Cement primer,(iii)Oil bound distempers,(iv) Emulsion Paints.
(i)Paints applied on Metals,(ii)Powder coated paints
Paints applied on wood work–(i)oil paints,(ii) plastic emulsions, (i) Varnishes, (ii) Polyurethane coating, (iii) Touchwood, (iv) Wood seals, (v) Melamine finishes for interiors and furniture, (vi)Anti-fungus&(vii)Anticorrosive paints

13.0 PLASTICS:

Uses of Plastics – (i) Fibre plastics, (ii) Reinforced plastics, (iii) PVC for doors and windows,(iv)Plastics for water tanks(v)Plastics for False Ceilings
Thermosetting and Thermo dynamic Plastics.
(i)Fibre reinforced plastics,(ii)Alkathene,(iii)Polythene,(iv)PVC,(v)Perspex, (vi)Thermo-plastics,(vii)Thermo setting plastics.

14.0 MODERNMATERAILS:

Properties & Uses of the following materials: - (i) Thermo cole, (ii) Plaster of paris(POP),(iii)GypsumBoards,(iv)AluminumElevationsheets,(

v)Aluminum composite panels,(vi)Polycarbonate sheets,(vii)Glass wool,(viii)Fibre-glass,(ix)Wall paper, (x)Cement Boards,(xi)Cork boards,(xii)Rubber sheets,(xiii)Tensile Roofing,

REFERENCEBOOKS:

1. Rangwala – Building Materials
2. Bindra & Arora - Building Construction
3. B.C.Punmia – Building Construction
4. Susil Kumar – Building Materials.
5. N.Srinivasulu – Building Materials
6. Neha Janwal &ML Gambhir- Building Materials

Syllabus to be covered for Unit Test-I, II & III of AA-105 BUILDING MATERIALS (C-20)

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 5.5
Unit Test – II	From 6.1 to 10.2
Unit Test – III	From 11.1 to 14.1

C-20 DAA AA-105 Building Materials Blue Print
(Format for Blue Print of a question paper)

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period-wise distribution of weightage				Question wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Stones	08	03	**2**	**2**	**4**			**1**		
2	Bricks	10	08	**2**	**3**	**4**	**1**	**11(b)**		**11(a)**	
3	Lime	08	03	**2**	**3**	**3**		**2**			
4	Clay Products	10	03	**2**	**4**	**4**		**3**			
5	Sand	06	03	**1**	**2**	**2**	**1**				**4**
6	Cement	08	08	**2**	**2**	**3**	**1**	**12(a) &(b)**			
7	Mortars	08	03	**2**	**2**	**4**			**5**		
8	Concrete	10	08	**2**	**3**	**4**	**1**		**13(a)**		**13(b)**
9	Timber and Timber Products	10	03	**2**	**3**	**4**	**1**		**6**		
10	Glass	06	03	**1**	**2**	**3**		**7**			
11	Metals	08	03	**2**	**2**	**4**				**8**	
12	Paints & Varnishes	08	03	**2**	**2**	**4**			**9**		
13	Plastics	08	08	**2**	**2**	**4**				**14(a) & (b)**	
14	Modern Materials	12	11	**2**	**2**	**7**	**1**			**10, 15(a) &(b)**	
15	Comprehensive from all the above chapters										**16**

R-remember U-Understanding Ap-Application An-Analysing

BASICDESIGN(C-20)

Course Title	Course Code	Periods/Week	Periods/Year
Basic Design	AA-106	06	180

CO No	Topic	Course Outcomes
C01	AA-106.1	Understand the importance of Architecture
C02	AA-106.2,3 & 4	Use of drawing instruments to draw horizontal and vertical lines, line weights, dimensioning, freehand lettering and graphic symbols to represent various building elements.
C03	AA-106.3&5	Understand colour and colour schemes.
C04	AA-106.6	sketch human figures, trees and plants, etc., in freehand in order to apply in presentation drawings
C05	AA-106.7	Understand design principles to create compositions of geometrical and non-geometrical objects.
C06	AA-106.8	Explain scales to know how to measure an object or room and draw to scale.
C07	AA-106.9	Explain plan, elevation and section in order to create a small design of a building

Course Title: Basic Design		
Course Objectives	(i) To develop drawing and drafting skills. (ii) To understand the basic design skills to be applied in architectural drawings. (iii) To express the design ideas and architectural vocabulary.	
Course Outcomes	C01	Understand the importance of Architecture
	C02	Use of drawing instruments to draw horizontal and vertical lines, line weights, dimensioning, free hand lettering and graphic symbols to Represent various building elements.
	C03	Understand colour and colour schemes.
	C04	Sketch human figures, trees and plants, etc., in free hand in order to Apply in presentation drawings
	C05	Understand design principles to create compositions of geometrical and Non-geometricalobjects.
	C06	Explain scales to know how to measure an object or room and draw to Scale.
	C07	Explain plan, elevation and section in order to create a small design of a building

TIMESCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of marks	No of short ans. questions	No of essay ans. questions
1.	Introduction	06	-	-	-
2.	Drawing Instruments	15	-	-	-
3.	Lines and Lettering	24	5	1	-

4.	Conventional Signs	09	5	1	-
5	Colors	12	5	1	
6	Architectural Rendering and Graphic symbols	12	5	1	
7.	Principles of basic design	27	5	1	-
8	Scale and measure drawings	24	-	-	-
9.	Building Drawings and design	51	35	1	1
	Total:	**180**	**60**	**6**	**1**

***Instructions for End Examinations: -**

- Big Size Drawing sheets are to be issued as many as required by the candidate,
- A separate drawing sheet to be provided to answer Part A which is to be collected at the end of first session.
- The drawing sheets to be issued for Part-B after completion of Part-A during the first session itself

Note:1. Duration of examination is for **6hours (Two sessions**)

2. No choice in Part- A and Part-B

3. Part-A:**6**questions-eachof**5 marks**

Part-B:1question –**30marks** from**9th**topic

LEARNINGOUTCOMES:

Upon completion of the course, the student should be able to

1.0 Introduction

Explain about Architecture and design.

2.0 Drawing Instruments:

Practice thoroughly the use of set-square and T-square

Know Grades of pencils available and their uses.

3.0 Lines and Lettering:

Usepencils2H,H,HB,B,2Band4Banddrawinghorizontallineswithvaryingpressures.

Practice IOX to perfection and then practicing single stroke free hand lettering.

Practice Single stroke architectural lettering (a)Upper case lettering (b)Lowercase lettering.

4.0 Conventional signs

Draw the representation of various Building materials

Draw the representation of various Electrical Signs

Draw the representation of various Plumbing signs

Draw the representation of various Doors and Windows.

5.0 Colors

Explain basic theory on colour like hue, tone, gradient, opacity and tint.

Draw the Colour wheel showing primary, secondary and tertiary colours. Explain warm and cool colours.

Draw the colour wheel to show the various Colour schemes like monochromatic, analogous, complimentary, split complimentary and triadic.

6.0 Architectural Rendering and Graphic symbols

Explain various types of renderings and their uses in presentation drawings.
Draw various free hand hatching patterns representing water, grass, rocks, ramps, various tones and textures.
Sketch the graphical representation of trees and plants in plan and elevation.
Sketch the Graphical representation of human figures in various positions.

7.0 Principles of Basic Design

Explain with illustrations the Principles of design like Unity, Balance, Rhythm, Proportion, Dominance and Contrast.
Explain the term Composition in architectural design by applying the Laws of composition, elements of composition, solids and voids, colours and textures, light and shadow.
Draw Compositions using basic geometrical forms like squares, circles, triangles, rectangles, etc. And also few non-geometrical forms like curves.
Practice Exercises on Drawing of Patterns like flooring, paving patterns, window grill, door and ceiling patterns.

8.0 Scale and measure Drawings:

Understand how to draw plan, elevation and section.
Explain types of Scales and Selection of scales for various types of drawings.
Explain how to lay Dimensions in drawings and also various types of dimension styles.
Understand how to measure an object using a measuring tape and how to sketch the object plan and section and to note the measurements taken.
TransferthemeasuredobjectandDrawingittosaidscaleinplan,elevation and section of (a) Chair (b) Table
Measure and Draw to scale the plan, section of a classroom.
Measure and Draw to scale the plan, section and elevation of a pedestal.

9.0 Building drawings and design.

Explain the Basics of Designing small structures and developing the elevation and sections from the plan,with complete dimensions.
Explain the typical bus shelter and make students to Design a Bus-stop shelter of their own.
Explain the typical Design of an Ice cream parlour and make students to design themselves.
Explain the requirements and let the student design the Watchman's cabin.
Explain the requirements and functions to make the student Design a Small building with multi purpose hall, kitchen and toilet.
Explain the functional requirements of a single bed room house with living cum dining, kitchen, bedroom, toilet and sit-out and the student should be able to design on his own, the plan, section and elevation.

COURSECONTENTS:

1.0 Introduction:

Introduction to Architecture.

2.0 Drawing Instruments:

Types of drawing instruments and their uses.
Importance and Usage of drawing instruments.

3.0 Lines and Lettering:

Different line weights and their importance.
Types of single stroke free hand lettering.
Single stroke architectural lettering
(a) Uppercase lettering
(b) Lowercase lettering.

4.0 Conventional signs:

Building materials
Electrical Signs
Plumbing signs
Doors and Windows.

5.0 Colour

Colour theory: hue, tone, gradient, opacity and tint.
Colour wheel: primary colours, secondary colours, tertiary colours. Warm colours and cool colours.
Colour schemes: mono chromatic, analogous, complimentary, split complimentary and triadic.

6.0 Architectural Rendering and Graphic symbols

Types of renderings and their uses in presentation drawings.
Various free hand hatching patterns representing water, grass, rocks, ramps, tones and textures.
Graphical representation of trees and plants in plan and elevation.
Graphical representation of human figures in various positions.

7.0 Principles of Basic Design

Principles of design: Unity, Balance, Rhythm, Proportion, Dominance, Contrast
Composition: Laws of composition, elements of composition, solids and voids, colours and textures, light and shadow.
Drawing Compositions using basic geometrical forms and non-geometrical forms.
Drawing of Patterns: flooring and paving patterns, window grill patterns, door patterns, ceiling patterns.

8.0 Scale and Measure Drawings:

Understanding plan, elevation and section.
Scales: Selection of scales for various types of drawings.
Dimensioning: Types of dimension styles and placing of dimensions.
Sketching the plan, elevation and section of objects and taking measurements of the objects with measuring tape.
Drawing to scale the plan, elevation and section of furniture:
(a) Chair
(b) Table
Drawing to scale the plan, section of a classroom.
Drawing to scale the plan, section and elevation of a pedestal.

9.0 Building Drawings and Design:

Basics of Designing small structures in plan, elevation and sections with complete dimensions.
Design of a Bus-stop shelter
Design of an Ice cream parlor
Design of a Watch man's cabin
Design of a Small building: multipurpose hall, kitchen, toilet
Design of a single bed room house: living cum dining, kitchen, bedroom, toilet and sit-out.

Exercises:

2.0 Use of Drawing Instruments:

1) Drawing exercise on drawing parallel lines with t-square.
2) Drawing exercise on drawing vertical lines with set squares.
3) Drawing exercise on drawing diagonal lines with set squares.

3.0 Lines and Lettering:

4) Drawing line weights using various grades of pencils.
5) Practicing the letters IXO in free hand.
6) SinglestrokeUppercasearchitecturalletteringstyle-1
7) SinglestrokeUppercasearchitecturalletteringstyle-2
8) Single stroke Lower case architectural lettering

4.0 Conventional signs:

9) Conventional signs of Building materials, Doors and Windows
10) Conventional signs of Electrical and Plumbing.

5.0 Colour

11) Colour wheel showing primary, secondary and tertiary colours.
12) Colour wheel showing Colour schemes: monochromatic, analogous, complimentary, split complimentary and triadic

6.0 Architectural Rendering and Graphic symbols

13) Various free hand hatching patterns representing water, grass, rocks, ramps, tones and textures.
14) Graphical representation of trees, plants in plan and elevation and human figures in various positions.

7.0 Principles of Basic Design

15) Sketches showing the Principles of design: Unity, Balance, Rhythm, Proportion, Dominance and Contrast.
16) Drawing Compositions using basic geometrical forms like squares circles, triangles and rectangles.
17) Drawing Compositions using non-geometrical forms.
18) Drawing Patterns of flooring and paving.
19) Drawing Patterns of window grills and doors.
20) Drawing Patterns of ceilings.

8.0 Scale and Measure Drawings:

21) Sketching the plan, elevation and section of objects and taking note of the measurements of chair and table with measuring tape and drawing the same to scale in plan and section.
22) Drawing to scale the plan, section of a classroom.
23) Drawing to scale the plan, section and elevation of a pedestal.

9.0 Building Drawings and Design

24) Drawing a given one bed room residence in plan, elevation and sections with complete dimensions.

25) Design of a Bus-stop shelter in plan, elevation and sections with complete dimensions.
26) Design of an Ice cream parlor in plan, elevation and sections with complete dimensions.
27) Design of a Watchman's cabin in plan, elevation and sections with complete dimensions.
28) Design of a Small building: multipurpose hall, kitchen, toilet in plan, elevation and sections with complete dimensions.
29) Design of single bed roomed house in plan, elevation and sections with complete dimensions.

Note: However, sheet no:1,2,3and5 does n't carry any marks

Reference Books:

1. **Joseph De Chiara- Time Saver Standards for building types.**
2. **Shaw, Kale and Patki- Building Drawing.**
3. **M.Prathap Rao- Principles and practice of Interior design**
4. **Robert W.Gill- Rendering with Pen and Ink.**

Blue Print of a question paper

Part-A: 30 marks, 6 questions, 5 marks each, **NO CHOICE.**
Part-B: 30 marks, 1 question carries30 marks, **NO CHOICE.**

Sl.no	Chapter name	Periods allocated	Weight age allocated	Periods wise distribution of weight age				Marks wise distribution of weight age			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	06	-		6						
2	Drawing Instruments	15	-		**5**	**10**					
3	Lines and Lettering	24	5	**10**		**14**				**5**	
4	Conventional Signs	09	5	**5**	**4**					**5**	
5	colour	12	5	**3**	**3**	**6**				**5**	
6	Architectural Rendering and Graphic symbols	12	5	**4**	**4**	**4**				**5**	
7	Principles of basic design	27	5		**9**	**9**	**9**	**3**	**2**		
8	Scale and measure drawings	24	-		**8**	**8**	**8**				
9	Building Drawings and design	51	35		**11**	**20**	**20**	**5**		**20**	**10**

R-remember U-Understanding Ap-Application An-Analysing

ARCHITECTURALGRAPHICS(C-20)

Course Title	Course Code	Periods/ Week	Periods/ Year
Architectural Graphics	AA-107	04	120

CO No	Topic	Course Outcomes
CO1	AA-107.1 to 5	State different procedures to draw line weights, dimensioning, lettering, polygons,
CO2	AA-107.6	Explain the concepts of scales, enlarging and reducing scales, R.F and construct plain and diagonal scales
CO3	AA-107.8	Draw first angle projections of solids when axis perpendicular to one plane and axis inclined to one plane,
CO4	AA-107.7 &9	Explain correct position of sectional plane, solids cut by different sectional plane and true shape with hatching
CO5	AA-107.10	State the differences between isometric, axonometric and oblique views.
C06	AA-107.10	Draw isometric, axon metric and oblique views for given solids and engineering objects.
CO7	AA-107.1 to 10	Practice perfection to draw different objects.

Course Objectives	(i) To know various types of Drawing Instruments and understand their Importance, applications. (ii)To get the knowledge how to draw line weights, dimensioning, lettering, polygons, projections of solids, section of solids, views and construction of scales	
Course Outcomes	C01	State different procedures to draw line weights, dimensioning, lettering, polygons
	C02	Explain the concepts of scales, enlarging and reducing scales, R. F and construct plain and diagonal scales
	C03	Draw first angle projections of solids when axis perpendicular to one plane and axis inclined to one plane,
	C04	Explain correct position of sectional plane, solids cut by different sectional plane and true shape with hatching
	C05	State the differences between isometric, axonometric and oblique views.
	CO6	Draw isometric, axonometric and oblique views for given solids and Engineering objects.
	C07	Practice perfection to draw different objects.

TIMESCHEDULE

S. No	Major Topics	No. of periods	Weightage of marks	No of short answer questions	No of essay answer questions
1.	Introduction	02	-	-	-
2.	Drawing instrument	02	-	-	-
3.	Lines	04	03	-	1
4.	Dimensioning	04	03	-	
5.	Lettering & Numbering	14	09	1	
6.	Scales	14	15	1	1
7.	Geometrical construction	20	15	1	1
8.	Orthographic Projection	20	15	1	1
9.	Sections	20	10	-	1
10.	Isometric, Axonometric, Oblique Views.	20	10	-	1
	Total:	**120**	**80**	**4**	**6**

Note: 1.Duration of examination is for 3 hours
2. Part A:4 questions–each question carries 5 marks
3. Part B: 4 questions have to be answered out of 6 questions .Each question carries 10marks

LEARNINGOUTCOMES:

Upon completion of the Course, the student should able to

1. **Introduction:**
   Understand the importance of drawing.
   Know the importance of drawing as a communication tool.
   Understand the link between Geometrical drawing and other subjects related to Architecture.
2. **Drawing Instruments:**
   Select correct instrument to draw horizontal, vertical and angular lines.
   Select correct instrument to draw small, large circles and arcs.
   Select correct instruments to measure the distance on the drawing.
3. **Lines:**
   Select correct grade of pencils for different types of lines, thickness, given the functions.
4. **Dimensioning:**
   State the need for dimensioning a drawing according to accepted standard.
   Define “Dimensioning”
   Identify the system of dimensioning to be followed.
   Practice Dimensioning and notation of important features of the drawing.
   Prepare title block and identify steps to keep the drawing neat& tidy.
5. **Lettering & Numbering:**
   Write drawing titles using vertical and sloping alphabets and numbers.
   Select suitable size of lettering for different layouts and

applications and lettering stencils.

6. **Scale:**
   Define the concepts of scales
   Understand enlarging and reducing scales.
   Construct Plain Scale.
   Construct diagonal scale.
   Understand the application of scale in drawing.
7. **Geometrical Construction:**
   Divide a given line into desired number of equal parts internally.
   Construct Polygons based on given data.
   Construct ellipse by concentric circles method
   Construct parabola by rectangle method
   Construct rectangular hyperbola from the given data
   Construct in volute from the given data
   Construct Cycloid and helix from the given data
8. **Orthographic Projection:**
   Explain the principles of orthographic Projection with simple sketches.
   Draw orthographic projection of geometrical plane in first angle projection.
   draw orthographic projection of geometrical solids in first angle projection.
9. **Section:**
   Explain the need to draw sectional view.
   Select correct position of sectional plane to show maximum details.
   Draw sectional views of geometrical solids cut by different sectional plane.
   Understand and apply principles of hatching.
10. **Isometric, Axonometric and Oblique view:**
    State the need for isometric, axonometric and oblique views.
    Draw isometric view for given solids.
    Draw isometric view, axonometric view and oblique view of the object for the given orthographic projection,
    Differentiate between isometric, axonometric and oblique views.

COURSECONTENTS

1. **Introduction:**
   Importance of drawing in graphic communication.
   Scope and objectives of the subject of drawing
   Role of drawing in architecture.
2. **Drawing Instruments:**
   Basic tools of drawing: Straight line, curved lines, distances, T-Square, set square, compass, drawing board, French curves, inking pens, Stencils, furniture templates, circles of ellipse templates, parallel bar, adjustable set square, selection of pencils, care and maintenance of drawing sheet and instruments.
3. **Lines:**
   Lines, Line types and line weights.
4. **Dimensioning:**
   Purpose of dimensioning
   Know the Size, description of engineering object
   Definition of dimensioning, size description, locations of features, Surface finish, fully dimensioned drawing.

Know the Notation and tools for dimensioning dimension line, extension line, leader line, arrow, symbols, numbers and notes, rules to be observed.
Placing of dimension line –aligned, Unidirectional
Arrangement of dimension – Chain, parallel, combined, program by co- ordinate methods.
Rules for dimensioning circles, arcs, angles, chamfer, taper and narrow spaces.
Importance and contents layout of sheet.

5.Lettering and numbering

Purpose of lettering Guide lines for lettering
Recommended size of letters and numbers.
Types of lettering –vertical, italics, etc
Advantage of single stroke and Simple Style of letters Use of lettering stencils.

6. Scale:

Scales,R.F.importanceofscalesconstructionofplainscale,diagonalscale.

7. Geometrical Construction:

Division of a line into given no. of equal parts, Bisectors
Methods to draw Polygons – i) using set squares, using compass – circles method, inscribing and circumscribing of polygon and circles
Construction of Ellipse by concentric circles method
Construction of parabola by rectangle method,
Construction of rectangular hyperbola
Construction of General curves: Involute
Constructions of Cycloid and Helix.

8. Orthographic Projection:

Orthographic Projection, concept of front view, top view, side view.
"First Angle Projection", position of three views in first angle.
Projection, use of MITRE line for projection of side views.
Projections of planes (Cases of planes perpendicular to one plane and inclined to other plane only.),of squares, rectangle, circles, polygons.
Projection of solids (Cases of axis perpendicular to one plane and inclined to other plane only), of cubes, prism, pyramid, solids of revolution–Cylinder and cones.

9. Section:

Need of drawing Sectional views.
Cutting planes–location, purpose, selection for maximum information.
Sections of Geometrical solids and their projections –cubes, cuboid, Prisms and pyramid.
Hatching of cut surfaces.

10. Isometric views, Axonometric views and Oblique views.

Pictorial drawing– Isometric, axonometric and oblique views.
Isometric drawing, angle for projection, visual distortion, isometric scale.
Isometric view of planes–Square, rectangle, polygons, circles.
Isometric views of solids- i) Prisms- Triangular, square, pentagonal, Hexagonal, ii)Pyramids-Triangular, square, pentagonal, Hexagonal, and engineering objects.

EXERCISES:

1. To draw lay out of sheet.
2. Simple exercises on the use of drawing instruments.
3. Lines, line weights.
4. Line types.
5. Dimensioning of a given drawings using the rules and method of Dimensioning.
6. Free hand lettering of alphabets and Numerals, vertical and sloping, capitals and small letters with different heights.
7. Free hand lettering of passage.
8. Construction of plain scale given R.F and max. length,5 and 6 problems to be solved.
9. Construction of diagonal scale given R.F,5 and 6 problems to be solved.
10. Construction of line into equal parts, perpendicular bisectors, angle bisectors with compass.
11. Construction of polygon using circle method.
12. Construction of polygon using set squares and T. squares
13. Construction of polygon using compass.
14. Orthographic projections of geometrical planes in different relative position with reference to HP&VP–10exercises.
15. Orthographic projections of geometrical solids in different relative position with reference toHP& VP-10exercises.
16. Sections of solids and their projection with different sectional planes.
17. Isometric views of solids and engineering objects.
18. Axonometric views of engineering objects.
19. Part-B No of essay ans. Questions Oblique views of engineering objects.

Reference Books:

1. R.C.Mouli :Engineering Drawing.
2. N.D.Bhatt : Engineering Drawing
3. 3.V.GopalKrishna : Engineering Drawing
4.Shaw,KaleandPatki :Building Drawing

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Mark wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	02	-	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
2	Drawing Instruments	02	-	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
3	Lines	04	15								
4	Dimensioning	04			**5**	**15**	**-**			**15**	
5	Lettering & Numbering	12									
6	Scales	16	15		**4**	**12**				**15**	

7	Geometrical construction	20	15		**5**	**15**				**15**	
8	Orthographic Projection	20	15		**5**	**15**				**15**	
9	Sections	20	10		**5**	**15**				**10**	
10	Isometric, Axonometric, Oblique views.	20	10		**5**	**15**				**10**	

R-remember
U-Understanding
Ap-Application
An-Analysing

PERSPECTIVE&SCIOGRAPHY(C-20)

Course Title	Course Code	Periods/Week	Periods/Semester
Perspective & Sciography	**AA-108**	06	180

CO No	Topics	Course Outcomes
C01	AA-108.1 &2	State the types of perspectives, terminology and their uses in architectural drawings.
C02	AA-108.3	Explain the concepts of one-point perspective and draw views of interiors.
C03	AA-108.4	Explain the concepts of two-point perspectives and draw the perspective views of blocks and small buildings.
CO4	AA-108.5	Explain the concepts of Sciography and draw it on simple elevations.

Course Title: Perspective & Sciography		
Course Objectives	(i) To understand the concepts of drawing perspective views from basic blocks to small buildings. (ii) To understand the concepts of Sciography and learn to draw Sciography in plans and elevations of various blocks and small structures.	
Course Outcomes	C01	State the types of perspectives, terminology and their uses in Architectural drawings.
	C02	Explain the concepts of one-point perspective and draw views of Interiors.
	C03	Explain the concepts of two-point perspectives and draw the Perspective views of blocks and small buildings.
	C04	Explain the concepts of Sciography and draw it on simple elevations.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weight age of Marks		No of short ans. questions	No of essay ans. questions
			Part-A	Part-B		
1.	Introduction	03	-		-	-
2.	Terminology	06	5		1	-
3.	One-point prospective	45	5	30	1	1
4.	Two-point perspective	90	5		1	
5.	Rendering& Sciography	36	5	10	1	1
	Total:	**180**	**20**	**40**	**4**	**2**

Note:

- The problem should be limited to small unit to enable the student to complete it within three hours of examination
- Duration of the examination is 3 hours (one session only)
- No choice in Part A and B
- Part-A: 4 questions –each of 5 marks Part B:2 questions 5^{th} Question – 30 Marks, from Major Topic No.46^{th}Question–10 Marks, from MajorTopicNo.5

LEARNINGOUTCOMES

Upon completion of the Couse, the student should able to

1.0 Introduction

State the importance of perspective views in architectural drawings.
Explain the uses of perspective views.

2.0 Terminology

Define and explain the terminology with sketches.
Explain the difference between the perspectives(One and two point).

3.0 One-point perspective

Explain the principle of projecting the view.
Draw & Explain on a board so as to understand by candidate to draw

4.0 Two-point perspective

Explain to understand the principle of projecting the view.
Draw &Explain on a board so as to understand by candidate to draw

5.0 Rendering &Sciography

Explain with sketches while defining the terminology
Explain to draw Sciography in elevations and simple blocks with different media pencil(black & White),Colour pencils etc.

COURSECONTENT

Introduction

i. Introduction to the subject and its importance.
ii. Uses of the perspectives in Architectural Design.

Terminology

i. Ground Plane
ii. Horizontal Plane
iii. Auxiliary Plane,
iv. Centre of vision
v. Central plane
vi. Eye level &Eye level plane
vii. Object
viii. Station point
ix. Height line
x. Picture plane
xi. Vanishing points
xii. Cone of vision
xiii. Fore ground

xiv. Back ground
xv. Sky line
xvi. Any other terms relevant to the subject
xvii. One-point perspective
xviii. Two-point perspective
xix. Differences and applicable uses of both perspectives.

One-point perspective

i. Concept and uses
ii. Method of projection & principles / Guidelines

Exercises

i) Object placed on the picture plane
ii) Object placed behind the picture plane
iii) Object placed in front of the picture plane

The exercises (i) (ii) and (iii) to be done considering single block (or) multiple blocks(or)Composed with various geometric forms (iv) An interior view for a bed room (or)small restaurant (or) class room (or) conference hall. (v) An Exterior view for an entrance façade.

Two-point perspective

i) Concept and uses of it
ii) Method of projection& principles/ Guidelines
a. Exercises – (a) Single block & multiple blocks forms of L,H,I & T, Steps etc. Note any two exercises to be done from the above.
b. Composite form of cube(Square/ rectangle)Cylinder, Cone etc,
c. Small buildings –Simple bedroom unit
d. Buildings of two bed room having single floor only.

Rendering & Sciography

Definitions of terms i) Shade ii) Shadow
iii) Shadow line iv) Sciography

Exercises in pencil media / colour pencils
a. Sciography for simple block sin elevations
b. Sciography for the views of one point & Two-point exercises did above.
c. Sciography for an elevation of building(Single bed or double bed unit).

REFERENCEBOOKS

1. Shah& Kale and Patki – Building drawing
2. Robert. W.Gill-Creative perspective
3. Robert. W.Gill-Rendering with pen & Ink
4. M.Prathap Rao- Interior Design
5. B.N.Dutta- Engineering Drawing

Blue Print of a question paper C-20 AA-108 PERSPECTIVE & SCIOGRAPHY

Part-A: 20 marks ,4 questions,5 marks each, **NO CHOICE**

Part-B: 40 marks, 2 questions -q5 carries 30marks and q6 carries 10 marks, NO CHOICE

Sl.no	Chapter name	Periods allocated	Weightage allocated	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	03	-		3						
2	Terminology	06	5	**4**	**2**			**4**	**2**		
3	One point prospective	45	5		**15**	**30**			**5**		
4	Two point perspective	90	35		**15**	**75**			**15**	**20**	
5	Rendering & Sciography	36	15		**10**	**26**			**5**	**10**	

R-remember
U-Understanding
Ap-Application
An- Analyzing

PHYSICSLABPRACTICE
(C-20CURRIUCULUMCOMMONTOALLBRANCHES)

Subject Code	Subject Title	Periods per week	Total periods per year
AA-109A	Physics Laboratory	03	45

TIMESCHEDULE

S.No	Name of the Experiment	No. of Periods
1.	Hands on practice on Vernier Calipers	03
2.	Hands on practice on Screw gauge	03
3.	Verification of Parallelogram law of forces and Triangle law of forces	03
4.	Simple pendulum	03
5.	Velocity of sound in air–(Resonance method)	03
6.	Focal length and Focal power of convex lens(Separate & Combination)(**Single**	03
7.	Refractive index of solid using traveling microscope	03
8.	Boyle's law verification	03
9.	Meter bridge	03
10.	Mapping of magnet lines of force and locate null points	03
	DEMONSTRATION EXPERIMENTS	
11.	Surface tension of liquid using traveling micro scope	03
12.	Coefficient of viscosity by capillary method	03
	Revision	06
	Test	03
	Total	**45**

Objectives:

Upon completion of the course the student shall be able to

1.0 Practice with Vernier calipers to determine the volumes and areas of a cylinder and sphere and their comparison etc .

2.0 Practice with Screw gauge to determine thickness of a glass plate, cross sectional area of a wire and volumes of sphere and also their comparison etc

3.0 Verify the parallelogram law and Triangle law

4.0 Determine the value of acceleration due to gravity using Simple Pendulum

5.0 Determine the velocity of sound in air at room temperature and its value at zero degree centigrade.

6.0 Calculate the Focal length and focal power of convex lenses using distant object method , U-V method, U-V graphand1/U–1/V graph methods and their comparison.

7.0 Determine the refractive index of a solid using travelling microscope.

8.0 Verify the Boyle's law employing a Quill tube.

9.0 Determine the specific resistance of material of a wire using Meter Bridge.

10.0 Drawing magnetic lines of force under N-S and N-N methods and locate null points.

11.0 Determine the surface tension of a liquid using travelling Microscope (**Demo)**

Determine the viscosity of a liquid using capillary method (**Demo)**

Competencies and Key competencies to be achieved by the student.

Name of the Experiment	Competencies	Key competencies
1. Hands on practice on Vernier Calipers (03)	Find the Least count Fix the specimen in posit Read the scales Calculate the physical quantities of given object	• Read the scales • Calculate the requisite physical quantities of given objects
2. Hands on practice on Screw gauge(03)	Find the Least count Fix the specimen in posit Read the scales Calculate thickness of glass place and cross section of wire and other quantities	Read the scales Calculate thickness of given glass plate Calculate cross section of wire and other quantities
3.VerificationofParallelogramlawofforcesandTrianglelawofforces(03)	• Fix suitable weights • Note the positions of threads on drawing sheet • Find the angle at equilibrium point • Construct parallelogram • Compare the measured diagonal • Construct triangle • Find the length of sides • Compare the ratios	• Find the angle at equilibrium point • Constructing parallelogram • Construct triangle • Compare the ratios of force and length
4.Simplependulum (03)	• Fix the simple pendulum to the stand • Adjust the length of pendulum • Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph	• Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2graph

5.Velocityofsoundinair –Resonance method (03)	• Arrange the resonance apparatus • Adjust the reservoir level for booming sound • Find the first and second resonating lengths • Calculate velocity of sound	• Adjust the reservoir level • Find the first and second resonating lengths • Calculate velocity of sound at room temperature • Calculate velocity of sound at 0^0C
6. Focal length and Focal power of convex lens (Separate & Combination)(03)	• Fix the object distance • Find the Image distance • Calculate the focal length and power of convex lens and combination of convex lenses • Draw u-v and 1/u – 1/v graphs	• Calculate the focal length and power of convex lens • Draw u-vand1/u–1/v graphs
7. Refractive index of solid using traveling microscope(03)	• Find the least count of Vernier on microscope • Place the graph paper below microscope • Read the scale • Calculate the refractive index of glass slab	• Read the scale • Calculate the refractive index of glass slab
8.Boyle's law verification (03)	• Note the atmospheric pressure • Fix the quill tube to retort stand • Find the length of air column • Find the pressure of enclosed air • Find and compare the calculated value P x l	• Find the length of air column • Find the pressure of enclosed air • Find the value Pxl
9.Meterbridge(03)	• Make the circuit connections • Find the balancing length • Calculate unknown resistance • Find the radius of wire • Calculate the specific resistance	• Find the balancing length • Calculate un known resistance • Calculate the specific resistance
10.Mapping of magnet lines of force(03)	• Draw magnetic meridian • Placed the bar magnet in N-N and N-S directions • Draw magnetic lines of force • Locate the neutral points along equatorial and axial	• Draw magnetic lines of force • Locate the neutral points along equatorial and axial lines

	lines	
11.Surfacetensionofliquid usingtravelingmicroscope (03)	• Find the least count of Vernier on microscope • Focus the microscope to the lower meniscus & bent pin • Read the scale • Calculate height of liquid rise • Calculate the surface tension of water	• Read the scale • Calculate height of liquid rise • Calculate the surface tension of water
12..Coefficient of viscosity by capillary method(03)	• Find the least count of vernier • Fix the capillary tube to aspiratory bottle • Find the mass of collected water • Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water using capillary method	• Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water

Scheme of Valuation for end Lab Practical Examination:

A. **Writing Aim, Apparatus, Formula, Graph, Precautions carries 10(Ten)Marks**
B. **For Drawing the table, taking Readings, Calculation work, Drawing the graph, finding result carries 15(Fifteen)Marks**
C. **Viva Voice 05(Five)Marks**
Total ***30(Thirty)Marks***

➢ **Course outcomes**

Course Out comes	CO 1	Experiments with Vernier calipers, Screw gauge, Parallelogram law and Triangle law
	CO 2	Experiments with Simple pendulum ,Resonance apparatus(Velocity of Sound in air)
	CO 3	Experiments with Convex lens, Refractive index of solid by travelling microscope
	CO 4	Experiments with quill tube (Boyles law verification),Meter bridge, Mapping of magnetic lines of force
	CO 5	Experiments with Surface tension nand Viscosity

CHEMISTRY LABORATORY
(C-20 curriculum common to all Branches)

Subject Code	Subject Title	Periods per week	Total periods per year
AA-109B	Chemistry Laboratory	03	45

CO1	Operate and practice volumetric apparatus and preparation of standard solution
CO2	Evaluate and judge the neutralization point in acid base titration
CO3	Evaluate the end point of reduction and oxidation reaction
CO4	Judge the stable end point of complex formation, stable precipitation
CO5	Judge operate and demonstrate and perform precise operations with instrument for investigation of water pollution parameters

TIMESCHEDULE

S.No	Name of the Experiment	No. of Periods	Mapped with COs
1.	a) Recognition of chemical substances and solutions used in the laboratory by senses. b) Familiarization of methods for Volumetric analysis	03	CO1
2.	Preparation of Std Na_2CO_3 and making solutions of different	03	CO1
3.	Estimation of HCl solution using Std.Na_2CO_3 solution	03	CO2
4.	Estimation of NaOH using Std.HCl solution	03	CO2
5.	Estimation of H_2SO_4 usingStd.NaOH solution	03	CO2
6.	Estimation of Mohr's Salt using Std.$KMnO_4$	03	CO3
7.	Determination of acidity of water sample	03	CO2
8.	Determination of alkalinity of water sample	03	CO2
9.	Determination of total hardness of water using Std.EDTA	03	CO4
10.	Estimation of Chlorides present in water sample	03	CO4
11.	Estimation of Dissolved Oxygen(D.O)in water sample	03	CO5
12.	Determination of pH using pH meter	03	CO5
13.	Determination of conductivity of water and adjusting ionic strength required level.	03	CO5
14.	Determination of turbidity of water	03	CO5
15.	Estimation of total solids present in water sample	03	CO5
	Total:	**45**	

Objectives:

Upon completion of the course the student shall be able to

1.0 Practice volumetric measurements (using pipettes, measuring jars, volumetric flask, burettes) and gravimetric measurements (using different types of balances), making dilutions, etc.To identify the chemical compounds and solutions by senses.

2.0 Practice making standard solutions with pre weighed salts and to make solutions of desired dilutions using appropriate techniques.

3.0 Conduct titrations adopting standard procedures and using Std. Na_2CO_3solutionfor estimation of HCl

4.0 Conduct titrations adopting standard procedures and using Std. HCl solution for estimation of NaOH

5.0 Conduct titrations adopting standard procedures and using Std. NaOH solution for estimation of H_2SO_4

6.0 Conduct titrations adopting standard procedures and using Std.$KMnO_4$solution for estimation of Mohr'sSalt

7.0 Conduct titrations adopting standard procedures to determine the acidity of given samples of water (One ground water and one surface / tap water, and rain water if available)

8.0 Conduct titrations adopting standard procedures to determine the alkalinity of given samples of water (One ground water and one surface / tap water)

9.0 Conduct titrations adopting standard procedures to determine the total hardness of given samples of water (One ground water and one surface / tap water) using Std. EDTA solution

10.0 Conduct titrations adopting standard procedures to determine the chlorides present in the given samples of water and wastewater (One ground water and one surface / tap water)

11.0 Conduct the test using titrometric / electrometric method to determine Dissolved Oxygen (D.O) in given water samples (One sample from closed container and one from open container / tap water)

12.0 Conduct the test on given samples of water / solutions (like soft drinks, sewage, etc.) to determine their pH using standard pH meter

13.0 Conduct the test on given samples of water / solutions
   a) To determine conductivity
   b) To adjust the ionic strength of the sample to the desired value

14.0 Conduct the test on given samples of solutions (coloured and non coloured) to determine their turbidity in NTU

15.0 To determine the total solids present in given samples of water (One ground water and one surface / tap water)

Competencies and Key competencies to be achieved by the student

Name of the Experiment (No of Periods)	Competencies	Key competencies
Familiarization of methods for Volumetric analysis. Recognition of chemical substances And solutions (03)	-	--
Preparation of Std Na_2CO_3 and making solutions of different dilution(03)	▪ Weighing the salt to the accuracy of .01 mg ▪ Measuring the water with volumetric flask, measuring jar, volumetric pipette and graduated pipette ▪ Making appropriate dilutions	▪ Weighing the salt to the accuracy of .01 mg ▪ Measuring the water with volumetric flask, measuring jar, volumetric pipette and graduated pipette ▪ Making appropriate
Estimation of HCl solution using Std. Na_2CO_3solution (03)	▪ Cleaning the glassware and rinsing with appropriate solutions ▪ Making standard solutions ▪ Measuring accurately the standard solutions and titrants ▪ Filling the burette with titrant ▪ Fixing the burette to the stand ▪ Effectively Controlling the flow of the titrant ▪ Identifying the end point ▪ Making accurate observations ▪ Calculating the results	▪ Making standard solutions ▪ Measuring accurately the standard solutions and titrants ▪ Effectively Controlling the flow of the titrant ▪ Identifying the end point ▪ Making accurate observations
Estimation of NaOH using Std.HCl solution (03)		
Estimation of H_2SO_4 using Std.NaOH solution (03)		
Estimation of Mohr's Salt using Std.$KMnO_4$ (03)		
Determination of acidity of water sample (03)		
Determination of alkalinity of water sample (03)		
Determination of total hardness of water using Std. EDTA solution (03)		
Estimation of Chlorides present in water sample (03)		
Estimation of Dissolved Oxygen(D.O) in water sample (By titration method) (03)		
Determination of pH using pH meter (03)	▪ Familiarize with instrument ▪ Choose appropriate	▪ Prepare standard solutions / buffers, etc.

Determination of conductivity of water and adjusting ionic strength to required level (03)	‘Mode’ / ‘Unit’ ▪ Prepare standard solutions / buffers, etc. ▪ Standardize the instrument with appropriate standard solutions ▪ Plot the standard curve ▪ Make measurements accurately ▪ Follow Safety	▪ Standardize the instrument with appropriate standard solutions ▪ Plot the standard curve ▪ Make measurements accurately
Determination of turbidity of water (03)		
Estimation of total solids present in water sample (03)	▪ Measuring the accurate volume and weight of sample ▪ Filtering and air drying without losing any filtrate ▪ Accurately weighing the filter paper, crucible and filtrate ▪ Drying the crucible in	▪ Measuring the accurate volume and weight of sample ▪ Filtering and air drying without losing any filtrate ▪ Accurately weighing the filter paper, crucible and filtrate

SCHEME OF VALUATION

A) Writing Chemicals, apparatus ,principle and procedure 5M

B) Demonstrated competencies 20M

Making standard solutions

Measuring accurately the standard solutions and titrants

Effectively controlling the flow of the titrant

Identifying the end point

Making accurate observations

C) Viva-voce 5M

Total 30M

COMPUTER FUNDAMENTALS LAB

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AA-110 (common to all branches)	Computer Fundamentals Lab	3	90	40	60

Time schedule:

S.No.	Chapter/Unit Title	No. of sessions each of 3 periods duration	No.of Periods
1.	Computer hardware Basics	2	6
2.	Windows Operating System	2	6
3.	MS Word	8	24
4.	MS Excel	7	21
5.	MS PowerPoint	5	15
6.	Adobe Photoshop	6	18
	Total periods	**30**	**90**

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Computer hardware Basics	6	CO1
2.	Windows Operating System	6	CO1
3.	MS Word	24	CO2
4.	MS Excel	21	CO3
5.	MS PowerPoint	15	CO4
6	Adobe Photoshop	18	CO5
	Total periods	**90**	

Course Objectives	i)To know Hardware Basics ii)To familiarize operating systems iii)To use MS Office effectively to enable to students use these skills in future courses iv) To use Adobe Photoshop in image editing.

Course Outcomes	At the end of the course students will be able to		
	CO1	C-110.1	Identify hardware and software components
	CO2	C-110.2	Prepare documents with given specifications using word processing software
	CO3	C-110.3	Use Spread sheet software to make calculation and to draw various graphs / charts.
	CO4	C-110.4	Use Power point software to develop effective presentation for a given theme or topic.
	CO5	C-110.5	Edit digital or scanned images using Photoshop

Learning Outcomes:

I. Computer Hardware Basics

1. a).To Familiarize with Computer system and hardware connections
   b).To Start and Shut down Computer correctly
   c).To check the software details of the computer
2. To check the hardware present in your computer

II. Windows's operating system

3. To Explore Windows Desktop
4. Working with Files and Folders
5. Windows Accessories: Calculator – Notepad – Word Pad – MS Paint

III. Practice with MS-WORD

6. To familiarize with Ribbon layout of MS Word
   Home – Insert- Page layout – References – Review- View.
7. To practice Word Processing Basics
8. To practice Formatting techniques
9. To insert a table of required number of rows and columns
10. To insert Objects, Clipart and Hyperlinks
11. To use Mail Merge feature of MS Word
12. To use Equations and symbols features

IV. Practice with MS-EXCEL

13. To familiarize with MS-EXCEL layout
14. To access and enter data in the cells
15. To edit a spread sheet- Copy, Cut, Paste, and selecting Cells
16. To use built in functions and Formatting Data
17. To create Excel Functions, Filling Cells
18. To enter a Formula for automatic calculations
19. To sort and filter data in table.
20. To present data using Excel Graphs and Charts.
21. To develop lab reports of respective discipline.
22. To format a Worksheet in Excel, Page Setup and Print

V. Practice with MS-POWERPOINT

23. To familiarize with Ribbon layout features of PowerPoint 2007.
24. To create a simple PowerPoint Presentation
25. To set up a Master Slide in PowerPoint
26. To insert Text and Objects
27. To insert a Flow Charts
28. To insert a Table
29. To insert a Charts/Graphs
30. To insert video and audio
31. To practice Animating text and objects ***32***. To Review presentation

VI. Practice with Adobe Photoshop

33.To familiarize with standard toolbox
34. To edit a photograph.
35. To insert Borders around photograph.
36. To change Background of a Photograph.
37. To change colors of Photograph.
38. To prepare a cover page for the book in your subject area.
39. To adjust the brightness and contrast of the picture so that it gives an elegant look.
40. To type a word and apply the shadow emboss effects.

Key competencies:

Expt No	Name of Experiment	Competencies	Key competencies
1 (a).	To familiarize with Computer system and hardware connections	**a.** Identify the parts of a Computer system: i). CPU ii). Mother Board iii) Monitor iv) CD/DVD Drive v) Power Switch vi) Start Button vii) Reset Button **b.** Identify and connect various peripherals c. Identify and connect the cables used with computer system d. Identify various ports on CPU and connect Keyboard & Mouse	Connect cables to external hardware and operate the computer
1 (b).	To Start and Shut down Computer correctly	a. Log in using the password b. Start and shut down the computer c. Use Mouse and Key Board	a. Login and logout as per the standard procedure b. Operate mouse &Key Board
1 (c).	To Explore Windows Desktop	a. Familiarize with Start Menu, Taskbar, Icons and Shortcuts b. Access application programs using Start menu, Task manager c. Use Help support	a. Access application programs using Start menu b. Use taskbar and Task manager
2.	To check the software details of the computer	a. Find the details of Operating System being used b. Find the details of Service Pack installed	Access the properties of computer and find the details
3.	To check the hardware present in your computer	a. Find the CPU name and clock speed b. Find the details of RAM and Hard disk present c.Access Device manager using Control Panel and check the status of devices like mouse and key board d. Use My Computer to check the details of Hard drives and partitions	a. Access device manager and find the details b. Type /Navigate the correct path and Select icon related to the details required

		e. Use the Taskbar	
4.	Working with Files and Folders	a. Create folders and organizing files in different folders b. Use copy / paste move commands to organize files and folder	a. Create files and folders Rename , arrange and search for the required folder/file
	Working with Files and Folders Continued....	c. Arrange icons – name wise, size, type, Modified d. Search a file or folder and find its path e. Create shortcut to files and folders (in other folders) on Desktop f. Familiarize with the use of My Documents g. Familiarize with the use of Recycle Bin	b. Restore deleted files from Recycle bin
5.	To use Windows Accessories: Calculator – Notepad – WordPad – MS Paint	a. Familiarize with the use of Calculator b. Access Calculator using Run command c. Create Text Files using Notepad and WordPad and observe the difference in file size d. Use MS paint and create .jpeg, .bmp files using MS Paint	a. Use windows accessories and select correct text editor based on the situation. b. Use MS pain to create /Edit pictures and save in the required format.
6.	To familiarize with Ribbon layout of MS word. – Home – Insert- page layout- References-Review- View	a. Create/Open a document b. Use Save and Save as features c. Work on two Word documents simultaneously d. Choose correct Paper size and Printing options	a. Create a Document and name appropriately and save b. Set paper size and print options
7.	To practice Word Processing Basics	a. Typing text b. Keyboard usage c. Use mouse (Left click / Right click / Scroll) d. Use Keyboard shortcuts e. Use Find and Replace features in MS- word f. Use Undo and Redo	a. Use key board and mouse to enter/edit text in the document. b. Use shortcuts c. Use spell check/ Grammar features for auto corrections.

		Features g. Use spell check to correct Spellings and Grammar	
8.	To practice Formatting techniques	a. Formatting Text b. Formatting Paragraphs c.Setting Tabs d. Formatting Pages e. The Styles of Word f. Insert bullets and numbers g. Themes and Templates h. Insert page numbers, header and footer	a. Format Text and paragraphs and use various text styles. b. Use bullets and numbers to create lists c. Use Templates /Themes d. Insert page numbers date, headers and footers
9.	To insert a table of required number of rows and columns	a. Edit the table by adding the fields – Deleting rows and columns –inserting sub table –marking borders. Merging and splitting of cells in a Table b. Changing the background colour of the table c.Use table design tools d. Use auto fit – fixed row/ column height/length – Even distribution of rows / columns features e. Convert Text to table and Table to Text f. Use Sort feature of the Table to arrange data in ascending/descending order	a. Insert table in the word document and edit b. Use sort option for arranging data.
10.	To Insert objects, clipart and Hyperlinks	a. Create a 2-page document. &Insert hyperlinks and t Bookmarks. b. Create an organization chart c.Practice examples like preparing an Examination schedule notice with a hyperlink to Exam schedule table.	a. Insert hyperlinks &Bookmarks b. Create organization charts/flow charts
11.	To Use Mail merge feature of MS Word	a. Use mail merge to prepare individually addressed letters b. Use mail merge to print	Use Mail merge feature

		envelopes.	
12.	To use Equations and symbols features.	a. Explore various symbols available in MS Word b. Insert a symbol in the text c. Insert mathematical equations in the document	Enter Mathematical symbols and Equations in the word document
13.	To Practice with MS-EXCEL	a. Open /create an MS Excel spreadsheet and familiarize with MS Excel 2007 layout like MS office Button- b. Use Quick Access Toolbar-Title Bar- Ribbon-Worksheets- Formula Bar-Status Bar	a. Familiarize with excel layout and use b. Use various features available in toolbar
14.	To access and Enter data in the cells	a. Move Around a Worksheets-Quick access - Select Cells b. Enter Data-Edit a Cell-Wrap Text-Delete a Cell Entry-Save a File-Close Excel	a. Access and select the required cells by various addressing methods b. Enter data and edit
15.	To edit spread sheet Copy, Cut, Paste, and selecting cells	a. Insert and Delete Columns and Rows-Create Borders-Merge and Center b. Add Background Color-Change the Font, Font Size, and Font Color c. Format text with Bold, Italicize, and Underline-Work with Long Text-Change a Column's Width	Format the excel sheet
16.	To use built in functions and Formatting Data	a. Perform Mathematical Calculations verify - AutoSum b. Perform Automatic Calculations-Align Cell Entries	Use built in functions in Excel
17.	To enter a Formula for automatic calculations	a. Enter formula b. Use Cell References in Formulae c. Use Automatic updating function of Excel Formulae d. Use Mathematical Operators in Formulae e. Use Excel Error Message and Help	Enter formula for automatic calculations
18.	To Create Excel Functions, Filling Cells	a. Use Reference Operators b. Work with sum, Sum if , Count and Count If Functions	a. Create Excel sheets involving cross references and equations

		c. Fill Cells Automatically	b. Use the advanced functions for conditional calculations
19.	To sort and filter data in table	a. Sort data in multiple columns b. Sort data in a row c. Sort data using Custom order d. Filter data in work sheet	a. Refine the data in a worksheet and keep it organized b. Narrow a worksheet by selecting specific choice
20.	To Practice Excel Graphs and Charts	a. Produce an Excel Pie Chart b. Produce c. Excel Column Chart	a. Use data in Excel sheet to Create technical charts and graphs Produce Excel Line Graph b. Produce a Pictograph in Excel
21.	To develop lab reports of respective discipline	Create Lab reports using MS Word and Excel	a. Insert Practical subject name in Header and page numbers in Footer
22.	To format a Worksheet in Excel, page setup and print	a. Shade alternate rows of data b. Add currency and percentage symbols c. Change height of a row and width of a column d. Change data alignment e. Insert Headers and Footers f. Set Print Options and Print	a. Format Excel sheet b. Insert headers &footers and print
23.	To familiarize with Ribbon layout &features of PowerPoint 2007.	Use various options in PowerPoint a. Home b. Insert c. Design d. Animation e. Slideshow f. View g. Review	Access required options in the tool bar
24.	To create a simple PowerPoint Presentation	a. Insert a New Slide into PowerPoint b. Change the Title of a PowerPoint Slide c. PowerPoint Bullets d. Add an Image to a PowerPoint Slide e. Add a Textbox to a PowerPoint slide	a. Create simple PowerPoint presentation with photographs/ClipArt and text boxes b. Use bullets option
25.	To Set up a Master Slide	a. Create a PowerPoint	a. Setup Master slide

	in PowerPoint and add notes	Design Template b. Modify themes c. Switch between Slide master view and Normal view d. Format a Design Template Master Slide e. Add a Title Slide to a Design Template f. The Slide Show Footer in PowerPoint g. Add Notes to a PowerPoint Presentation	and format b. Add notes
26.	To Insert Text and Objects	a. Insert Text and objects b. Set Indents and line spacing c. Insert pictures/ clipart d. Format pictures e. Insert shapes and word art f. Use 3d features g. Arrange objects	Insert Text and Objects Use 3d features
27.	To insert a Flow Chart / Organizational Charts	a. Create a Flow Chart in PowerPoint b. Group and Ungroup Shapes c. Use smart art	Create organizational charts and flow charts using smart art
28.	To insert a Table	a. PowerPoint Tables b. Format the Table Data c. Change Table Background d. Format Series Legend	Insert tables and format
29.	To insert a Charts/Graphs	a. Create 3D Bar Graphs in PowerPoint b. Work with the PowerPoint Datasheet c. Format a PowerPoint Chart Axis d. Format the Bars of a Chart e. Create PowerPoint Pie Charts f. Use Pie Chart Segments g. Create 2D Bar Charts in PowerPoint h. Format the 2D Chart e. Format a Chart Background	Create charts and Bar graphs, Pie Charts and format.
30.	To Insert audio & video, Hyperlinks in a slide Add narration to the slide	a. Insert sounds in the slide and hide the audio symbol b. Adjust the volume in the settings c. Insert video file in the format supported by PowerPoint in a slide d. Use automatic and on click options e. Add narration to the slide	a. Insert Sounds and Video in appropriate format. b. Add narration to the slide c. Use hyperlinks to switch to different slides and files

		f. Insert Hyperlinks	
31.	To Practice Animation effects	a. Apply transitions to slides b. To explore and practice special animation effects like Entrance, Emphasis, Motion Paths &Exit	Add animation effects
32.	Reviewing presentation	a. Checking spelling and grammar b. Previewing presentation c. Set up slide show d. Set up resolution e. Exercise with Rehearse Timings feature in PowerPoint f. Use PowerPoint Pen Tool during slide show g. Saving h. Printing presentation (a) Slides (b) Hand-out	a. Use Spell check and Grammar feature b. Setup slide show c. Add timing to the slides d. Setup automatic slide show
33	To familiarize with standard toolbox	a. Open Adobe Photoshop b. Use various tools such as i. The Layer Tool ii. The Color& Swatches Tool iii. Custom Fonts & The Text Tool iv. Brush Tool v. The Select Tool vi. The Move Tool vii. The Zoom Tool viii. The Eraser ix. The Crop Tool x. The Fill Tool	Open a photograph and save it in Photoshop
34	To edit a photograph	a. Use the Crop tool b. Trim edges c. Change the shape and size of a photo d. Remove the part of photograph including graphics and text	a. Able to edit image by using corresponding tools.
35	To insert Borders around photograph	a. Start with a single background layer b. Bring the background forward c. Enlarge the canvas d. Create a border color e. Send the border color to the back f. Experiment with different colors	Able to create a border or frame around an image to add visual interest to a photo
36	To change Background of a Photograph	a. open the foreground and background image b. Use different selection tools to paint over the image	Able to swap background elements using the Select and Mask tool and layers.

		c. Copy background image and paste it on the foreground. d. Resize and/or drag the background image to reposition. e. In the Layers panel, drag the background layer below the foreground image layer.	
37	To change colors of Photograph	a. Change colors using: i) Color Replacement tool ii) Hue/Saturation adjustment layer tool	Able to control color saturation
38	To prepare a cover page for the book in subject area	a. open a file with height 500 and width 400 for the cover page. b. apply two different colors to work area by dividing it into two parts using Rectangle tool. c. Copy any picture and place it on work area→ resize it using free transform tool. d. Type text and apply color and style e. Apply effects using blended options	Able to prepare cover page for the book
39	To adjust the brightness and contrast of picture to give an elegant look	a. open a file. b. Go to image→ adjustments→ Brightness/Contrast. c. adjust the brightness and contrast. d. Save the image.	Able to control brightness/contrast.
40	To type a word and apply the shadow emboss effects	a. open a file b. Select the text tool and type text. c. Select the typed text go to layer→ layer style→ blended option→ drop shadow, inner shadow, bevel and emboss→ contour→ satin→ gradient overlay d. Save the image.	Able to apply shadow emboss effects

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1 to 8
Unit test-2	From 9 to 22
Unit test-3	From 23 to 40

III SEM

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)

SCHEME OF INSTRUCTIONS AND EXAMINATIONS
III SEMESTER (C-20)

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-301	Engineering Mathematics – II	04	-	60	03	20	80	100
AA-302	History of Indian Architecture	04	--	60	03	20	80	100
AA-303	Engineering Mechanics	05	-	75	03	20	80	100
AA-304	Surveying	04	--	60	03	20	80	100
AA-305	Building Specifications	03	--	45	03	20	80	100
PRACTICALS								
AA-306	Architectural Design – I	--	06	90	09	40	60	100
AA-307	Building Construction Drawing-I	--	03	45	03	40	60	100
AA-308	Interior and Landscape Design	--	03	45	03	40	60	100
AA-309	Computer Aided Design and Draughting Lab-I	--	06	90	03	40	60	100
AA-310	Surveying Practicals	--	04	60	03	40	60	100
	Totals	**20**	**22**	**630**	**--**	**300**	**700**	**1000**

Subject Title : ENGINEERING MATHEMATICS-II

Course Code	Course Title	No. of Periods/week	Total No. of periods	Marks for FA	Marks for SA
AA-301	Engineering Mathematics-II	4	60	20	80

S.No.	Unit Title	No. of periods	COs mapped
1	Indefinite Integration	22	CO1
2	Definite Integration and its applications	24	CO2
3	Differential Equations of first order	14	CO3
	Total Periods	**60**	

Course Objectives	(i) To understand the concepts of indefinite integrals and definite integrals with applications to engineering problems. (ii) To understand the formation of differential equations and learn various methods of solving them.

Course Outcomes	CO1	Integrate various functions using different methods.
	CO2	Evaluate definite integrals with applications.
	CO3	Obtain differential equations and solve differential equations of first order and first degree.

L**earning Outcomes**

Unit-I

C.O. 1 Integrate various functions using different methods.

L.O.1.1. Explain the concept of Indefinite integral as an anti-derivative.

1.2. State the indefinite integral of standard functions and properties of Integrals $\int (u + v)\, dx$ and $\int k\, u\, dx$ where k is constant and u, v are functions of x.

1.3. Solve integration problems involving standard functions using the above rules.

1.4. Evaluate integrals involving simple functions of the following type by the method of substitution.

i) $\int f(ax + b)\, dx$ where $f(x)dx$ is in standard form.

ii) $\int [f(x)]^n f'(x)\, dx$

iii) $\int f'(x)/[f(x)]\, dx$

iv) $\int f\{g(x)\}\, g'(x)\, dx$

1.5. Find the integrals of $\tan x$, $\cot x$, $\sec x$ and $\operatorname{cosec} x$ using the above.

1.6. Evaluate the integrals of the form $\int \sin^m x \cos^n x\, dx$ where m and n are suitable positive integers.

1.7. Evaluateintegrals of suitable powers of $\tan x$ and $\sec x$.

1.8. Evaluate the Standard integrals of the functions of the type

$i)\ \frac{1}{a^2+x^2}, \frac{1}{a^2-x^2}, \frac{1}{x^2-a^2}$

$ii)\ \frac{1}{\sqrt{a^2+x^2}}, \frac{1}{\sqrt{a^2-x^2}}, \frac{1}{\sqrt{x^2-a^2}}$

$iii)\ \sqrt{x^2-a^2}, \sqrt{x^2+a^2}, \sqrt{a^2-x^2}$

1.9. Evaluate the integrals of the type

$$\int \frac{1}{a+bSin\theta} d\theta, \int \frac{1}{a+b\cos\theta} d\theta \text{ and } \int \frac{1}{a\cos\theta+b\sin\theta+c} d\theta .$$

1.10. Evaluate integrals using decomposition method.

1.11. Solve problems using integration by parts.

1.12 Use Bernoulli's rule for evaluating the integrals of the form $\int u.v dx$.

1.13. Evaluate the integrals of the form $\int e^x [f(x) + f'(x)]\, dx$.

Unit-II

C.O.2 Evaluate definite integrals with applications.

L.O.2.1. State the fundamental theorem of integral calculus

2.2. Explain the concept of definite integral.

2.3. Solve problems on definite integrals over an interval using the above concept.

2.4. State various properties of definite integrals.

2.5. Evaluate simple problems on definite integrals using the above properties.

Syllabus for Unit test-I completed

2.6. Explain definite integral as a limit of sum by considering an area.

2.7. Find the areas under plane curves and area enclosed between two curves using integration.

2.8. Obtain the mean value and root mean square value of the functions in any given interval.

2.9. Obtain the volumes of solids of revolution.

2.10.Solve some problems using Trapezoidal rule, Simpson's 1/3 rule for approximation of integrals.

Unit -III

C.O. 3 Form differential equations and solve differential equations of first order and first degree.

L.O.3.1 Define a Differential equation, its order and degree

3.2 Find order and degree of a given differential equation.

3.3 Form a differential equation by eliminating arbitrary constants.

3.4Solve the first order and first degree differential equations by variables separable method.

3.5 Solve Homogeneous differential equation of first order and first degree.

3.6 Solve exact differential equation of first order and first degree.

3.7 Solve linear differential equation of the form dy/dx + Py = Q, where P and Q are functions of x or constants.

3.8 Solve Bernoulli's differential equation reducible to linear form.

3.9 Solve simple problems arising in engineering applications.

Syllabus for Unit test-II completed

COURSE CONTENTS

Unit-I

Indefinite Integration.

1. Integration regarded as anti-derivative – Indefinite integrals of standard functions. Properties of indefinite integrals. Integration by substitution or change of variable. Integrals of tan x, cot x, sec x, cosec x. Integrals of the form $\int \sin^m x.\cos^n x\,dx$, where at least one of m and n is odd positive integers. Integrals of suitable powers of tanx. secx and cosecx.cotx by substitution.

Evaluation of integrals which are reducible to the following forms:

$$i)\ \frac{1}{a^2+x^2}, \frac{1}{a^2-x^2}, \frac{1}{x^2-a^2}$$

$$ii)\ \frac{1}{\sqrt{a^2+x^2}}, \frac{1}{\sqrt{a^2-x^2}}, \frac{1}{\sqrt{x^2-a^2}}$$

$$iii)\ \sqrt{x^2-a^2}, \sqrt{x^2+a^2}, \sqrt{a^2-x^2}$$

Integration by decomposition of the integrand into simple rational, algebraic functions. Integration by parts, Bernoulli's rule and integrals of the form $\int e^x [f(x) + f'(x)]\,dx$.

Unit-II

Definite Integral and its applications:

2. Definite integral-fundamental theorem of integral calculus, properties of definite integrals, evaluation of simple definite integrals. Definite integral as the limit of a sum. Area under plane curves – Area enclosed between two curves. Mean and RMS values of a function on a given interval Volumes of solids of revolution. Trapezoidal rule, Simpson's 1/3 rule to evaluate an approximate value of a define integral.

Unit -III

Differential Equations:

3. Definition of a differential equation-order and degree of a differential equation- formation of differential equations-solutions of differential equations of first order and first degree using methods, variables separable, homogeneous, exact, linear differential equation, Bernoulli's equation.

Textbook:

Engineering Mathematics-II, a textbook for third semester diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers.
2. Schaum's Outlines Differential Equations, Richard Bronson & Gabriel B. Costa
3. M.Vygodsky, Mathematical Handbook: Higher Mathematics, Mir Publishers, Moscow.

BLUE PRINT

S. No	Chapter/Unit title	No of Periods	Weightage allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
				R	U	Ap	An	R	U	Ap	An	
1	**Unit – I: Indefinite Integration**	22	28	11	11	06	0	2	2	2	0	**CO1**

2	**Unit – II: Definite Integration and its applications**	24	33	11	03	11	08	2	1	2	1	**CO2**
3	**Unit – III: Differential Equations of first order**	14	19	03	03	03	10	1	1	1	1	**CO3**
Total		**60**	**80**	**25**	**17**	**20**	**18**	**5**	**4**	**5**	**2**	

R: Remembering Type : 25 Marks
U: understanding Type : 17 Marks
Ap: Application Type : 20 Marks
An: Analysing Type : 18 Marks

Engineering Mathematics – II
Unit Test Syllabus

Unit Test	Syllabus
Unit Test-I	From L.O 1.1 to L.O 2.5
Unit Test-II	FromL.O 2.6 to L.O 3.9

HISTORY OF INDIAN ARCHITECTURE (C-20)

Course Title : History of Indian Architecture
Course Code : AA-302
Periods / Week : 04

Periods /Semester : 60

CO No	Topic	Course Outcomes
CO 1	AA-302.1	Explain the Importance of the Indian Architecture.
CO 2	AA-302.2 AA-302.3	Explain the development of Vedic Architecture and Indus Valley Architecture.
CO 3	AA-302.4 AA-302.5	Explain the development and features of Buddhist and Hindu Rock-Cut Architecture
CO 4	AA-302.6 AA-302.7	Explain the evolution of Architectural forms and development of Dravidian and Indo- Aryan Architecture
CO 5	AA-302.8 AA-302.9	Explain distinct features and Architectural characteristics of Indo-Islamic and Mughal Architecture

Course Title: HISTORY OF INDIAN ARCHITECTURE		
Course Objectives	**i)**To Understand the Evolution and development of architectural features and characteristics of structures of Ancient India ii) To understand the Vedic, Indus valley, Buddhist, Hindu, Islamic and Mughal Architecture in India iii) To understand the ancient important structures by practising in the sketch book.	
Course Outcomes	**C01**	Explain the Importance of the Indian Architecture.
	C02	Explain the development of Vedic Architecture and Indus Valley Architecture.
	C03	Explain the development and features of Buddhist and Hindu Rock-Cut Architecture
	C04	Explain the evolution of Architectural forms and development of Dravidian and Indo- Aryan Architecture
	C05	Explain distinct features and Architectural characteristics of Indo-Islamic and Mughal Architecture

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	Short questions	Essay questions	Part C Eassy question
1.	Influences on Indian Architecture	3	03	1	-	
2.	Vedic Architecture	3	03	1	-	
3.	Indus Valley	3	03	1	-	

	Architecture					
4.	Buddhist Architecture	8	11	1	1	
5.	Hindu Rock Cut Architecture	4		-		
6.	Dravidian Architecture	12	11	1	1	
7.	Indo – Aryan Architecture	7	14	2	1	1
8.	Indo-Islamic Architecture	10	11	1	1	
9.	Mughal Architecture	10	14	2	1	
	From above all topics	-	10	-	-	
	Total:	**60**	**80**	**10**	**5**	**01**

LEARNING OUTCOMES

Upon the completion of the subject the student shall be able to

1.0 Influence on Indian Architecture

1.1 Explain the factors influenced on the formation and development of Indian Architecture.

2.0 Vedic Architecture

2.1 Explain the Vedic Architecture.

2.2 Explain the planning of Vedic houses and town planning.

2.3 Sketch the types of Vedic houses.

3.0 Indus Valley Architecture

3.1 Explain the development of Indus Valley Architecture.

3.2 Explain the planning of courtyard houses, towns, and drainage system.

4.0 Buddhist Architecture

4.1 Explain the development and Architectural features of Buddhist Architecture.

4.2 Sketch and describe Sanchi stupa

4.3 Explain the planning and, elevation features of Sanchi stupa and interior columns of Chaitya Hall at Karli and Vihara at Ajanta.

4.4 Sketch the plan of chaitya Hall and Viharas.

5.0 Hindu Rock – Cut Architecture

5.1 Explain the development of Hindu Rock – Cut Architecture.

5.2 Sketch & Explain the Kailasa Temple at Ellora.

5.3 Sketch and Explain the Monolithic Rathas at Mamallapuram

6.0 Dravidian Architecture

6.1 Explain the evolution of Architectural forms and development of Dravidian Architecture

6.2 Sketch and Explain the Shore temple at Mamallapuram

6.3 Explain the great structure of Brihadeswara temple at Tanjore of Chola Dynasty

6.4 Sketch and explain the great sikhara of Brihadeswara Temple.

6.5 Sketch and Explain the plan and elevation of Gopuram of Pandyas

6.6 Explain the design development of mandapas and hypostyle hall of Vithala temple at Hampi.
6.7 Sketch the plan of Vithala temple at Hampi of Vijayanagar dynasty.
6.8 Explain the planning and development of Madurai temple complex.
6.9 Sketch and Explain the Meenakshi temple at Madurai

7.0 Indo – Aryan Architecture

7.1 Explain the architectural character of Orissan temple
7.2 Sketch and Explain the temple of Lingaraja at Bhuvaneswar.
7.3 Explain the architectural features of Khajuraho temple.
7.4 Sketch and Explain the Kandaria Mahadeo temple.

8.0 Indo-Islamic Architecture

8.1 Explain distinct features and Architectural characters of indo-islamic Architecture.
8.2 Sketch and Explain Alai Darwaja.
8.3 Sketch and Explain the general feature of Indian Mosque.
8.4 Sketch and Explain the Jamma Masjid of Ahmedabad.
8.5 Sketch and Explain the Charminar at Hyderabad and Gol Gumbaz at Bijapur of Deccan Architecture.

9.0 Mughal Architecture

9.1 Explain the development and architectural features of Mughal architecture.
9.2 Sketch and Explain the structures of Fatehpur Sikri- Diwan –i-khas and Jodh bai palace
9.3 Sketch and Explain Tajmahal at Agra.
9.4 Sketch and Explain Mughal garden of Shalimarbagh at Srinagar.

COURSE CONTENTS:

1.0 Influence on Indian Architecture

Formation and development of Indian Architecture.

2.0 Vedic Architecture

Planning of Vedic houses and town planning.

3.0 Indus Valley Architecture

Development of Indus Valley Architecture. planning of courtyard houses, towns, and Drainage system.

4.0 Buddhist Architecture

Architectural features of Buddhist Architecture. planning and, elevation features of Sanchi stupa, Chaitya Hall at Karli and Vihara at Ajanta.

5.0 Hindu Rock – Cut Architecture

Development of Hindu Rock – Cut Architecture, Kailasa Temple at Ellora and Monolithic Rathas at Mamallapuram

6.0 Dravidian Architecture

Architectural forms and development of Dravidian Architecture-Shore temple at Mamallapuram-Brihadeswara temple at Tanjore of Chola Dynasty-Plan and elevation of Gopuram of Pandyas-Design development of mandapas and hypostyle hall of Vithala temple at Hampi of Vijayanagar dynasty-Madurai temple complex.

7.0 Indo – Aryan Architecture

Architectural character of Orissan temple-Temple of Lingaraja at Bhuvaneswar-Architectural features of Khajuraho temple-Kandaria Mahadeo temple.

8.0 Indo-Islamic Architecture

Architectural characters of indo-islamic Architecture- Alai Darwaja-General feature of Indian Mosque-Jamma Masjid of Ahmedabad-Charminar at Hyderabad and Gol Gumbaz at Bijapur .

9.0 Mughal Architecture

Development and architectural features of Mughal architecture-Fatehpur Sikri-Diwan –i-khas and Jodh bai palace-Tajmahal at Agra-Mughal garden of Shalimarbagh at Srinagar.

REFERENCE BOOKS:

1. Banister Fletcher-History of Architecture
2. Percy Brown -Indian Architecture (Buddhist & Hindu)
3. Percy Brown- Indian architecture (Islamic)
4. Satish Grover-Indian Architecture

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 6.3
Unit Test - II	From 6.4 to 9.4

Format for Blue Print of a question paper

Sl. no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	U	Ap	An	R	U	Ap	An
1	Influences on Indian Architecture	3	3	1	2	-	-	-	3	-	-
2	Vedic Architecture	3	3	1	2	-	-	-	3	-	-
3	Indus Valley Architecture	3	3	1	2	-	-	-	3	-	-
4	Buddhist Architecture	8	11	2	6	-	-	2	9	-	-
5	Hindu Rock Cut Architecture	4	11	1	3	-	-	2	9	-	-
6	Dravidian Architecture	12	11	3	9	-	-	2	9	-	-
7	Indo – Aryan Architecture	7	14	1	6	-	-	4	10	-	-
8	Indo-Islamic Architecture	10	11	1	9	-	-	3	9	-	-
9	Mughal Architecture	10	14	1	9	-	-	3	11	-	-
From above all topics			10	-	-	-	1	-	-	-	1

R-remember U-Understanding Ap-Application An-Analysing

ENGINEERING MECHANICS (C-20)

Course Title : Engineering Mechanics
Course Code : AA-303
Periods / Week : 05
Periods /Semester : 75

CO No	Topic	Course Outcomes
CO 1	AA-303.1	State the systems of Measurement and units
CO 2	AA-303.2	Explain the concept of different forces and moments
CO 3	AA-303.3	Compute the Centroid for various sections
CO 4	AA-303.3	Compute the Moment of Inertia of various sections.
CO 5	AA-303.4	Calculate the simple Stresses and Strains in structures.

ENGINEERING MECHANICS		
Course Objectives	(i)	Familiarize with the concepts of forces and their types, applications of forces and moments, calculate the geometric properties like centroid and moment of inertia... etc., for various sections
	(ii)	Acquire the concepts of simple stresses and strains and their applications, and their relevance to mechanical properties of metals
Course Outcomes	CO 1	State the systems of Measurement and units
	CO 2	Explain the concept of different forces and moments
	CO 3	Compute the Centroid for various sections
	CO 4	Compute the Moment of Inertia of various sections.
	CO 5	Calculate the simple Stresses and Strains in structures.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	Part-A short questions	Part-B questions	Part-C Essay questions
1.	Systems of Measurement	05	03	01	-	01
2.	Forces & Moments	20	17	03	01	
3.	Centroid & Moment of Inertia	25	25	03	02	
4.	Simple Stress and Strain	25	25	03	02	
	From above all Topics	--	10	--	--	
	Total	**75**	**80**	**10**	**05**	**01**

LEARNING OUTCOMES

Upon completion of the course the student should be able to

1.0 Systems of Measurements

1.1 Know systems of Measurement and units

1.2 State base/supplementary/fundamental units of length, mass, time and plane angle in S.I system.

1.3 Distinguish between base/fundamental and derived units.

1.4 State S.I., units of physical quantities used in Civil Engineering / Architecture.

2.0 Forces and Moments

2.1 Understand Equilibrium of Co-Planar forces

2.2 Define: Force, Moment, Resultant, Equilibrium of forces : equilibrant and Moment of a couple.

2.3 Distinguish between Scalar and Vector quantities, Co-planar and non- co-planar forces, parallel and non-parallel forces like and unlike parallel forces.

2.4 Compute the resultant of two co-planar forces acting at a point by law of parallelogram and law of Triangle of forces, concept of Lamis theorem.

2.5 Compute the resultant of a system of coplanar concurrent forces by law of polygon of forces and by resolution.

2.6 Compute the resultant of a system of coplanar parallel forces.

2.7 Explain the properties of a couple.

2.8 State the condition of equilibrium of rigid body subjected to a number of co- planar forces.

2.9 Determine resultant of co-planar concurrent forces by analytical methods.

3.0 Centroid and Moment of Inertia

3.0 Define Centroid

3.1 State positions of centroids for simple regular plane figures.

3.2 Determine position of centroids of T, L, I, C, Z, unsymmetrical I section

3.3 Define Moment of Inertia and radius of gyration

3.4 Determine moment of Inertia and Radius of gyration for regular geometrical sections.

3.5 Determine moment of Inertia of simple sections applying parallel axis and perpendicular axis theorems.

3.6 Calculate radius of gyration of rectangular, square and circular sections.

3.7 Calculate Moment of inertia and radius of gyration of T, L, I and C sections. (Symmetrical and unsymmetrical)

4.0 Simple Stress and Strain

4.0 Understand Behaviour of Materials under simple Stress

4.1 Define terms:

Stress, strain, Modulus of Elasticity, Longitudinal Strain, Lateral Strain, Poisson's ratio, Modulus of rigidity, Bulk Modulus, working stress, Factor of safety, Resilience, Strain Energy, proof Resilience, Modulus of Resilience.

4.2 Distinguish between different kinds of stresses and strains.

4.3 Explain the salient points in stress-strain curve for different ductile materials.

4.4 State HOOKE'S LAW and limits of proportionality.

4.5 Solve problems on relationship between simple stress and simple strain under axial loading on uniform bars.

4.6 State the relationship between the elastic constants.

4.7 Solve problems on relationship between elastic constants.

4.8 Calculate stresses in simple and composite members under axial Loading.

COURSE CONTENT

1.0 Systems of Measurements and units

S.I. System.

Base units, fundamental units and derived units.

Units for length, area, volume, mass, force, moment of Inertia, radius of gyration, density, pressure, stress, resilience and strain energy.

2.0 Forces & Moments

Definition of force; vectors and scalars; vector representation of a force; systems of forces; co-planar forces.

Resultant of forces at a point – parallelogram Law and triangle Law of forces – Lamas theorem – polygon law of forces – Resolution of forces.

Parallel forces – like and unlike – moment of force-its units and sense-couple-moment of a couple – properties of a couple.

Conditions of equilibrium of a rigid body subjected to a number of co-planar forces.

3.0 Centroids and Moment of Inertia

(a) Centroid

Definitions – centroid

Position of centroids of standard figures like rectangle, triangle, parallelogram, circle, semi-circle and trapezium.

Determination and location of centroids of T, L, C, I and Z section.

(b) Moment of Inertia

Definition of Moment of Inertia

Perpendicular and parallel axes theorems

Moment of Inertia of standard sections like rectangle, triangle, circle

Moment of Inertia T, L, I, C and Z sections using parallel axis theorem and Perpendicular axis theorem. (Symmetrical and Unsymmetrical)

4.0 Simple Stress and Strain

Stress and strain – type of stresses and strains

Stress strain curves for ductile materials- mild steel, elastic limit, limit of proportionality, yield point, ultimate stress; breaking stress; working stress factor of safety.

Hooke's law – Young's modulus – deformation under axial load.

Shear stress and Shear Strain – Modulus of rigidity.

Longitudinal and lateral strain-Poisson's ratio Bulk Modulus – relationship between elastic constants (proof not required, only problems).

Composite sections – effect of axial loads

REFERENCE BOOKS

1. R.S.KURMI -Engineering Mechanics.
2. P.K. Abdul Latheef -Engineering Mechanics
3. Dayaratnam - Engineering Mechanics Statics
4. N. Srinivasulu - Engineering Mechanics
5. A.Kamala & A.V.R.J.Sharma- Engineering Mechanics

Syllabus to be covered for Unit Test-I & Unit Test-II

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 3.4
Unit Test – II	From 3.5 to 4.8

Blue Print of a question paper AA-303 ENGINEERING MECHANICS (C-20)

Part-A: 30 marks ,10 questions,3 marks each, **NO CHOICE**-60 minutes (6 Minutes each question)

Part-B: 40 marks, 5 questions, 8 marks each, **EITHER OR TYPE**-90 minutes (18 Minutes each question)

Part-C: 10 marks 1 question, -30 minutes **(Higher Order Question)**

Sl.no	Chapter name	Periods allocated	**Weightage of Marks allotted**	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Systems of Measurement	5	3	4	1			2	1		
2	Forces & Moments	20	17	**2**	**8**	**5**	**5**	**3**	**10**		**4**
3	Centroid & Moment of Inertia	25	25	**2**	**10**	**5**	**8**	**2**	**13**		**10**
4	Simple Stress and Strain	25	25	**3**	**10**	**2**	**10**	**2**	**13**		**10**
	From above all topics		**10**	**-**	**-**	**-**	**-**			**5**	**5**
		75	**80**								

R-remember U-Understanding Ap-Application An-Analyzing

SURVEYING (C-20)

Course Title : Surveying
Course Code : AA-304
Periods/Week : 04
Periods /Semester : 60

CO No	Topic	Course Outcomes
C01	AA-304.1	Define the terms used in different types of surveying
C02	AA-304.2	State the purpose, fundamental principles, and uses of different types of surveying.
C03	AA-304.3	Explain the operations involved in chaining on flat and sloping grounds and when high ground intervenes, Practice chain triangulation/traversing for location survey and errors involved in chain.
C04	AA-304.4	Explain the operations involved in field compass surveying like taking bearings and calculation of included angles & traversing and errors involved in compass.
C05	AA-304.5	Explain the fundamental principles of levelling, tabulate the levelling field data and computation of reduced levels and errors involved in levelling
C06	AA-304.7	Explain the principles of theodolite surveying and compute horizontal, vertical angles, and traversing.
C07	AA-304.7	Explain the classification of total station, measurement of area with single station setup.

Course Objectives	(i) To get the knowledge on units, measurements, functions of different instrument used in surveying (ii) To understand purpose, principles, concepts and classification of surveys (iii) To Develop skills in using basic surveying instruments like measuring chains, tapes, compass, levels, theodolite and total station.	
Course Outcomes	C01	Define the terms used in different types of surveying
	C02	State the purpose, fundamental principles, and uses of different surveying.
	C03	Explain the operations involved in chaining on flat and sloping grounds and when high ground intervenes, Practice chain triangulation/traversing for location survey and errors involved in chain.
	C04	Explain the operations involved in field compass surveying like taking bearings and calculation of included angles & traversing and errors involved in compass.
	C05	Explain the fundamental principles of levelling, tabulate the levelling field data and computation of reduced levels and errors involved in levelling
	C06	Explain the principles of theodolite surveying and compute horizontal, vertical angles, and traversing.

	C07	Explain the classification of total station, measurement of area with single station setup.

TIME SCHEDULE

S.No.	Major Topics	No. of Periods	Weightage of Marks	Part-A No of short answer questions	Part-B No of essay answer questions	Part-C No of essay answer questions
1.	Classification of surveying	03	03	01	--	10
2.	Chain Surveying	10	14	02	01	
3.	Compass surveying	14	14	02	01	
4.	Levelling	15	14	02	01	
5.	Theodolite Surveying	10	14	02	01	
6.	Total Station	08	11	01	01	
	From above all the topics		**10**			
	Total	**60**	**80**	**10**	**05**	**01**

LEARNING OUTCOMES:

Upon completion of the subject the student should be able to.

1.0 **Classification of surveying**

1.1 State the purpose of surveying.

1.2 State the units of linear and angular measurements in surveying.

1.3 State the instruments used for taking linear and angular measurements.

1.4 State the classification of surveys.

1.5 State the fundamental principles in surveying.

2.0 Chain Surveying

2.1 Explain the functions of different equipments used in Chain Surveying.

2.2 Explain methods of ranging and chaining a line.

2.3 List-out the operations involved in chaining on flat and sloping ground and when high ground intervenes.

2.4 Explain the method of setting out right angles with or without cross staff.

2.5 Explain the method of recording field observations.

2.6 Determine the corrections for incorrect length of chain

2.7 Explain the principles used in Chain triangulation.

2.8 Explain the methods of overcoming the different obstacles in chain surveying.

2.9 Explain the method of preparing site plans by Chain Surveying.

2.10 Calculate the areas using analytical method only.

3.0 Compass Surveying

3.1 State the purpose and principles of Compass Surveying.

3.2 Identify the parts of a prismatic Compass and State their functions.

3.3 Define terms-whose circle bearing, quadrantal bearing, True meridian, magnetic meridian, true bearing, magnetic bearing, declination, local attraction.

3.4 Convert whole circle bearing into quadrantal bearing and vice versa.
3.5 Explain local attraction & its effect.
3.6 Determine bearing corrected for local attraction.
3.7 Compute the included angles and true bearings on lines in a compass traverse from data.
3.8 Explain the operations involved in field in compass Surveying
3.9 Explain methods of recording field notes.

4.0 levelling

4.1 Define levelling
4.2 List the types of levelling instruments
4.3 Define Datum or Datum plane, reduced level, Level surface, Horizontal surface, Vertical line, Station, Mean sea level, and. Bench Mark
4.4 List the component parts of a Dumpy level and their functions
4.5 List the temporary adjustments of a Dumpy level.
4.6 Explain the steps involved in performing Temporary adjustments of a dumpy level.
4.7 Define Back sight, Fore sight, Intermediate sight and Change Point
4.8 List types of levelling staves
4.9 List the fundamental lines of dumpy level
4.10 State the relationship among fundamental lines of dumpy level
4.11 Explain permanent adjustments of a dumpy level
4.12 Tabulate the levelling field data
4.13 State two methods of reducing levels
4.14 Compare height of instrument and Rise and fall methods
4.16 Compute reduced levels by height of instrument and Rise and fall methods, and apply check
4.17 List the errors in levelling
4.18 Explain 1. Natural and 2. Instrumental errors
4.19 List the Precautions to be taken to prevent errors in levelling
4.20 Explain the operations involved in performing Profile levelling, reciprocal levelling.

5.0 Theodolite surveying

5.1 Identify the parts and functions of a theodolite
5.2 List the fundamental lines of a theodolite and their relationships.
5.3 List the steps involved in carrying out temporary adjustments for taking observations
5.4 Explain measuring of horizontal and vertical Angles.

6.0 Total Station

6.1 List the parts of total station and their functions.
6.2 Explain the classification of total station.
6.3 Explain the setting up total station for taking observations
6.4 List the uses of total station.
6.5 Explain the procedure for measurement of distances and angles.
6.6 Explain the procedure of taking multiple number of observations on a single station.
6.7 Explain the procedure for measurement of area with single station setup.
6.8 Explain the procedure of traversing using total station.

COURSE CONTENT

1.0 Classification of Surveying

a) Concept of Surveying-purpose of Surveying-measurements Linear and angular instruments used for taking these measurements, Classification of Survey based on instruments, purpose of field work – Engineering Surveys- Reconnaissance, preliminary location Survey-fundamental principles in Surveying.

2.0 Chain Surveying

a) Purpose and Principle of Chain Survey equipment's used and their function- Chains and arrows, metallic tapes and steel tapes – ranging rods, offset rods – pegs-plumb bob, optical square, Line ranger.

b) Errors in ordinary Chaining-Correction due to incorrect length of Chain or tape.

c) Different operations in Chain Surveying-ranging, direct and Indirect Ranging-Chaining on sloping ground –Setting out right angles with open cross staff and tape-principles used in Chain triangulation.

d) Recording field notes – field book-Conventional signs.

e) Obstacles in chaining-methods to overcome obstacles.

f) Calculations of area – different methods –average ordinate, trapezoidal and Simpson's rules.

3.0 Compass Surveying

a) Purpose and principle of compass Survey-description, working and use of prismatic compass.

b) Concept of true meridian-magnetic meridian, designation of bearings whole circle bearing. Quadrantal bearing, conversion of whole circle bearing to quadrantal bearing.

c) Compass Survey in field –field notes-traverse using prismatic compass.

d) Local attraction-detection and correction, conversion of magnetic bearings to true bearings-calculation of included angles in compass traverse.

4.0 Levelling

4.1 Definition of levelling

4.2 Types of levelling instruments

4.3 Definitions: Datum or Datum plane, Reduced level, Level surface, Horizontal Surface, Vertical Line, Station, Mean sea level, and Bench Mark

4.4 Component parts of a Dumpy level and their functions, sketch of dumpy level

4.5 Temporary adjustments of a Dumpy level – setting, levelling and elimination of parallax

4.6 Steps involved in performing Temporary adjustments of a dumpy level.

4.7 Back sight, Fore sight, Intermediate sight and Change Point

4.8 Types of levelling staves

4.9 Fundamental lines of dumpy level

4.10 Relationship among fundamental lines of dumpy level.

4.11 Permanent adjustments of a dumpy level.

4.12To 4.16 Tabulation of levelling field data, methods of reducing levels, height of instrument and Rise and fall methods, Comparison of height of instrument and Rise and fall methods, Computation of reduced levels by height of instrument and Rise and fall methods, and apply check

4.17 List the errors in levelling

4.18 Explain 1. Natural and 2. Instrumental errors

4.19 List the Precautions to be taken to prevent errors in levelling

4.20 Explain the operations involved in performing Profile levelling, reciprocal levelling.

5.0 Theodolite

a) Principles of Theodolite surveying, Component parts, technical Terms, detailed study of a transit. Fundamental lines and conditions of adjustments. Temporary adjustments.

b) Measurement of horizontal angles by repetition and reiteration method. Measurement of vertical angles.

c) Errors in theodolite work.

6.0 Total Station

a) Parts and functions-classification of total station - setting up total station for taking observations. - Uses of Total station – Measurement of distances and angles – Multiple number of observations on a single station – Measurement of area with single station setup – Traversing using a total station.

REFERENCE BOOKS

1 Kulakarni and Kanetkar : Surveying and levelling Vol. –1
2. B.C. Punmia : Surveying and Levelling Vol. –1
3. Nagaraju and Hussain : Surveying – 1
4. A. Kamala : Surveying – 1
5. A.M Chandra (New Age int.) : Higher Surveying

C-20 AA-304 Surveying

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 3.9
Unit Test - II	From 4.1 to 6.8

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Mark wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Classification of surveying	03	03	**3**				**3**			
2	Chain Surveying	10	14	**4**	**6**			**6**	**8**		
3	Compass surveying	14	14	**4**	**10**			**6**	**8**		
4	Levelling	15	14	**5**	**10**			**6**	**8**		
5	Theodolite Surveying	10	14	**2**	**8**			**6**	**8**		
6	Total Station	08	11	**2**	**6**			**3**	**8**		
	From above all the topics		**10**								**10**

R-remember U-Understanding Ap-Application An-Analysing

BUILDING SPECIFICATIONS (C-20)

Course Title : BUILDING SPECIFICATIONS
CourseCode : AA-305
Periods / Week : 03
Periods / Semester : 45

CO No	Topic	Course Outcomes
CO 1	AA-305.1	Explain the Importance, Types procedure of writing and uses of specifications.
CO 2	AA-305.2	Explain the specifications for different Building materials.
CO 3	AA-305.3	Explain to Write the Specifications for different activities of Building construction

Course Title: BUILDING SPECIFICATIONS		
Course Objectives	i)To understand the specifications for building materials and procedure of writing Specifications as per APDSS and types of Specifications. ii) To understand the specifications for the different types of building materials and different activities of building construction i) To Write the Procedure of specifications as per APDSS.	
Course Outcomes	**C01**	Explain the Importance, Types, procedure of writing and uses of specifications.
	C02	Explain the specifications for different Building materials.
	C03	Explain to Write the Specifications for different activities of Building construction.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	No of short questions	No of essay questions	Part C Essay question
1.	Introduction to Specifications and Estimation	02	-	-	-	
2.	Specifications for Building Materials	11	11	1	1	
3.	Detailed Specifications for different stages of building construction. a) Clearing and levelling of site	1	3	1		
	b) marking of lines and Excavation of trenches	1	3	1	--	

	c) Laying P.C concrete bed and construction of footings and Plinth with R.R. Masonry	3	8	--	1	1
	d) Filling in Trenches and basement	1	3	1	--	
	e) Laying of D.P.C at Plinth level	2	11	--	1	
	f) Construction of superstructure with Brick Masonry in C.M	4		1		
	g) R.CC works	4	14	1	1	
	h) Plastering	4		1		
	i) Flooring	4	14	1	1	
	j) Wood work	4		1		
	k) Protective and Decorative finishes.	4	03	1		
From above all Topics		-	10	-	-	
Total:		**45**	**80**	**10**	**5**	**01**

LEARNING OUTCOMES

Upon the completion of the subject the student shall be able to

1.0 Introduction

1.1 Explain the types of specifications and Estimations.

1.2 Explain broadly the uses of specification and Estimation.

1.3 Explain the procedure of writing specifications

2.0 Specifications for Building Materials

2.1 Explain the specifications for the following building materials: stone, Brick, sand, gravel, cement, Lime, water, glass, wood, paint, G.I. sheets and A.C. sheets.

3.0 Detailed Specifications for different stages of building construction

3.1 Explain the detailed specifications for clearing and levelling of site: Clearing of bushes, filling of loose pockets of soil, watering and levelling.

3.2 Explain the detailed specifications for Excavation of Trenches for foundations.

3.3 Explain the detailed specifications for laying plain cement concrete bed, Footings and Plinth for R.R. Masonry and Brick Masonry.

3.4 Explain the detailed specifications for back filling in foundation and Plinth.

3.5 Explain the detailed specifications for laying Damp Proof course at Plinth level.

3.6 Explain the detailed specifications for super structure with Brick Masonry in Cement Mortar.

3.7 Explain the detailed specifications for R.C.C works.

3.8 Explain the detailed specifications for plastering works.

3.9 Explain the detailed specifications for various types of flooring: Cement concrete, Natural stone, tiles and Mosaic.

3.10 Explain the detailed specifications for Wood works like Doors and Windows.

3.11 Explain the detailed specifications for Decorative and protective finishing's for Walls, Ceilings, Wood works and Iron works.

COURSE CONTENTS:

1.0 Introduction

Types of specifications and Estimations-Uses of specification and Estimation-procedure of writing specifications

2.0 Specifications for Building Materials

Specifications for the following building materials: stone, Brick, sand, gravel, cement, Lime, water, glass, wood, paint, G.I. sheets and A.C. sheets.

3.0 Detailed Specifications for different stages of building construction

Clearing and levelling of site: Clearing of bushes, filling of loose pockets of soil, watering and levelling- Excavation of Trenches for foundations -Laying plain cement concrete bed, Footings and Plinth for R.R. Masonry and Brick Masonry-Back filling in foundation and Plinth.

Detailed specifications for laying Damp Proof course at Plinth level-Super structure with Brick Masonry in Cement Mortar- R.C.C works-Plastering works-Various types of flooring: Cement concrete, Natural stone, tiles and Mosaic-Wood works like Doors and Windows- Decorative and protective finishing's for Walls, Ceilings, Wood works and Iron works.

Reference Books:

1. B.N.Dutta- Estimating and Costing
2. Mahajan - Estimating and Costing
3. APDSS of CPWD

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test – II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 3.5
Unit Test - II	From 3.6 to 3.11

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**
2	Specifications for Building Materials Detailed	**11**	**11**	**2**	**9**	**-**	**-**	**2**	**9**	**-**	**-**
3	Specifications for different activities of building construction.										

	a) Clearing and levelling of site	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**3**	**-**	**-**
	b) marking of lines and Excavation of trenches	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**3**	**-**	**-**
	c) Laying P.C concrete bed and construction of footings and Plinth with R.R. Masonry	**3**	**8**	**1**	**2**	**-**	**-**	**3**	**5**	**-**	**-**
	d) Filling in Trenches and basement	**1**	**3**	**-**	**1**	**-**	**-**	**-**	**3**	**-**	**-**
	e) Laying of D.P.C at Plinth level	**2**	**11**	**1**	**1**	**-**	**-**	**2**	**9**	**-**	**-**
	f) Construction of super structure with Brick Masonry in C.M	**4**	**11**	**2**	**2**	**-**	**-**	**2**	**9**	**-**	**-**
	g) R.CC works	**4**	**14**	**1**	**3**	**-**	**-**	**2**	**12**	**-**	**-**
	h) Plastering	**4**	**14**	**1**	**3**	**-**	**-**	**2**	**12**	**-**	**-**
	i) Flooring	**4**	**14**	**1**	**3**	**-**	**-**	**2**	**12**	**-**	**-**
	j) Wood work	**4**	**14**	**1**	**3**	**-**	**-**	**2**	**12**	**-**	**-**
	k) Protective and Decorative finishes.	**4**	**3**	**1**	**3**	**-**	**-**	**2**	**12**	**-**	**-**
From above all Topics			**10**	**-**		**-**	**1**	**-**	**-**	**-**	**1**

R-remember
U-Understanding
Ap-Application
An-Analysing

ARCHITECTURAL DESIGN - I

Course Title : Architectural Design - I
Course Code : AA-306
Periods / Week : 06
Periods /Semester : 90

CO No	Topic	Course Outcomes
C01	AA-306.1,2,3,4	Explain the Importance of design concepts
C02	AA-306.1,2,3,4	Analyse given existing project through case study.
C03	AA-306.1,2,3,4	Explain Flowchart, schematic plans, aesthetics, design concepts, planning features for residential and commercial buildings
C04	AA-306.1,2,3,4	Explain the orientation, circulation spaces and cross ventilation for residential and commercial buildings.
C05	AA-306.1,2,3,4	Explain byelaws for residential and commercial buildings
C06	AA-306.1,2,3,4	Design and draw plans, elevations, sectional elevations and site plan for residential and commercial buildings

ARCHITECTURAL DESIGN – I		
Course Objectives	(i)	To understand Fundamental concepts on Site planning, flowchart, schematic plans, aesthetics, design concepts, and Planning features of various structures.
	(ii)	To Know Minimum standards for Habitable rooms, orientation, cross ventilation aspects, horizontal circulation, vertical circulation spaces with respect to the given design problem
	iii)	To do case study and analyze the existing project relevant to the design topic
	(iv)	To design and draw the complete portfolio of the given design problems
Course Outcomes	**C01**	Explain the Importance of design concepts
	C02	Analyse given existing project through case study.
	C03	Explain Flowchart, schematic plans, aesthetics, design concepts, planning features for residential and commercial buildings
	C04	Explain the orientation, circulation spaces and cross ventilation for residential and commercial buildings.
	C05	Explain byelaws for residential and commercial buildings
	CO6	Design and draw plans, elevations, sectional elevations and site plan for residential and commercial buildings

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weight age of Marks		No of short ans. Questions	No of essay ans. questions
			Part-A	Part - B		
1	**Design and planning techniques**	9	5		1	
2	**Design Factors**	9	5		1	-
3	**Residential Buildings** i) Double bedroom ii) Duplex residential unit	36	5	40	1	1
4	**Commercial Buildings** i) Architect office II) Restaurant	36	5		1	
	Total	90	60		4	1

Note for Examination:

1. Duration of examination is for 9 hours (divided into three sessions)
2. No choice in Part A and B
3.. **Part-A:** Answer all the **Four** questions and each carry **Five** marks
4. **Part-A** answers and Tracing of the Part-B Plan is to be submitted and collected at the end of first session which will be returned at the end of the exam to be tagged all together.
5. **Part B:** Question no:5 carries 40 marks from Major Topic no: 3 or 4 .

LEARNING OUTCOMES:

Upon completion of the course the student should be able to

1.0 Design and planning techniques

1.1 Explain the Design concepts,flowchart, schematic plans.

1.2 Explain Principles of aesthetics, planning techniques.

2.0 Design Factors

2.1 Explain orientation, cross ventilation, circulation spaces, functional spaces and standards.

3.0 Residential Buildings

i) Double bedroom

ii) Duplex residential unit

3.1 Explain functional requirements and design factors for the residential buildings.

3.2 Explain the schematic line drawings.

3.4 Explain detailed working drawings for plan, section and elevation

3.5. Explain site planning, showing location of building, approach road/passage/Drive Way/parking, etc.

3.6 Design and draft to make complete portfolios for double bedroom and duplex Residential unit.

4.0 Commercial Buildings

i) Architect office
ii) Restaurant

4.1 Explain functional requirements and design factors for the commercial buildings.
4.2 Explain the schematic line drawings.
4.3 Explain detailed working drawings for plan, section and elevation
4.4 Explain site planning, showing location of building, approach road/passage/Driveway/parking, etc.
4.5 Design and draft to make complete portfolios for Architect office and Restaurant

Note for Case studies

1. The batch of students have to seek written permission /recommendation from Course teacher, HoD and Principal of the institution on a letterhead addressing the concerned project authorities.
2. Total strength of the class to be divided into batches not less than 3 and not more than 7
3. The case studies selected for the project can be one or two.
4. The batches to be guided by the Course teacher in the method of studying the Project so that each batch of students have to be entrusted one of the following tasks of study: - (i) study the site, (ii) plan of the building, (iii) elevations of the building provided for such case.
5. A comprehensive report of the case study entrusted to each batch is to be prepared and presented in form of sketches, drawings, photographs and write-ups.
6. For said case-study maximum 10 marks to be allotted out of internal marks of 40.
7. The risk factors to be taken care by the students themselves, the institution is not responsible for any untoward incidents, damages thereafter
8. Before seeking the permission for case study, the students must have to submit the duly filled indemnity bond.

COURSE CONTENTS

1.0 Design and planning techniques:

Design concepts, flowchart, schematic plans,
Principles of aesthetics, planning principles-

2.0 Design factors

Orientation, cross ventilation, circulation spaces, functional spaces and standards

3.0 Residential Buildings

i) Double bedroom ii) Duplex residential unit

4.0 **Commercial Buildings**

i) Architect office ii) Restaurant

Note for drawings: - Each portfolio should contain the following exercises.

a. Flow Chart.
b. Schematic line drawing.
c. Draw plans, sections and elevations.
d. Site Planning.

e. Schedule of Areas, doors and windows.

REFERENCE BOOKS:-

1. Time saver standard - Building type and design data.
2. V.N.R. Design.

3. Neufert's, Architects data.
4. Shaw/Kale and Patki -Building drawing.
5. Pratap Rao. M- Principles and Practice of Interior Design
6. Robert W Gill- Rendering with Pen and Ink.

Question paper pattern

Part-A: 20 marks , 4 questions &5 marks each, **NO CHOICE**- (15 Minutes each question)

Part-B: 1 questions, 40marks, (8 Hrs)

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated		Period wise distribution of weightage				Marks wise distribution of weightage			
			Part-A	PART-B	**R**	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	**Design and planning procedure**	9	**5**		**3**	**3**	**3**			**5**		
2	**Design Factors**	9	**5**		**3**	**3**	**3**			**5**		
3	**Design Problem -1** Residential Buildings i) Double bedroom ii) Duplex residential unit	36	**5**	**40**	**15**	**18**	**42**	**15**	**5**	**10**	**40**	**5**
4	**Design Problem - 2** Commercial Buildings i) Architect office II) Restaurant	36	**5**									

R-remember U-Understanding Ap-Application An-Analysing

BUILDING CONSTRUCTION DRAWING-I (C20)

Course Title : Building Construction Drawing-I
Course Code : AA-307
Periods / Week : 03
Periods / Semester : 45

CO No	Topic	Course Outcomes
C01	AA-307.1	Explain Dampness and its prevention in buildings
C02	AA-307.2	Explain types of Foundations
C03	AA-307.3	Explain the form work
C04	AA-307.4	Explain the Types of Masonry and Partitions
C05	AA-307.5	Explain the Types of Stair cases

Course title: BUILDING CONSTRUCTION DRAWING-I		
Course Objectives	**i**	To understand the building construction right from the foundation to the super structure.
	ii	To understand and draw the construction details from foundation to super structure.
	iii	To comprehend the knowledge of Masonry & Partition, Staircases i) To Know the knowledge of Foundations ii) To familiarized with Form Work, masonry, partitions and staircases.
Course Outcomes	**C01**	Explain Dampness and its prevention in buildings
	C02	Explain types of Foundations
	C03	Explain the form work
	C04	Explain the Types of Masonry and Partitions
	C05	Explain the Types of Stair cases

TIME SCHEDULE

Sl. No.	Major Topics	No. of Periods	Weightage of Marks	short questions	essay questions
1.	Damp proof Course	6	15	1	1
2.	Foundations	9	10		1
3.	Form Work	6	15	1	1
4.	Masonry & Partition	12	25	1	2
5.	Stair cases	12	15	1	1
	TOTAL	45	80	4	6

Note for Examination:

Duration of exam is for **3 hours** (one session only)

Part-A: Answer all the **Four** questions and each question carry **Five** marks.

Part-B: Answer any **Four** questions out of **Six** and each question carries **Ten** Marks.

LEARNING OUTCOMES:

Upon the completion of the subject the student shall be able to

1.0 Damp proof course

1.1 Explain the causes of Dampness
1.2 Explain Reasons for ill effects caused by dampness
1.3 Explain type of Materials used for damp prevention
1.4 Explain the Horizontal D.P.C and Vertical DPC
1.5 Explain and draw the D.P.C for basements, Floors, Roofs, and Water tanks

2.0 Foundations

2.1 Explain the types of soils and their behaviour.
2.2 Explain the Bearing capacity of different types of soils
2.3 Explain the Timbering of trenches
2.4 Explain and Draw the Shallow Foundations
a) Spread footing b) Combined footing
2.5 Explain and Draw the types of Deep foundations
a) Pile Foundation a) Single reamed b) Double reamed

3.0 Form Work

3.1 Explain and Draw Component parts of shuttering and Shuttering for columns
3.2 Explain and Draw Cantering - Component parts of cantering Cantering for slabs and beams
3.3 Explain and Draw Scaffolding - Component parts of Scaffolding
a) Single Scaffolding
b) Double Scaffolding
c) Tubular Scaffolding

4.0 Masonry work.

4.1Explain the construction of Stone **masonry** work.

Explain the general principles to be observed in stone masonry Construction
a) Draw the different types of stone Masonry.
b) Explain the general principles to be observed in stone and brick masonry Construction.
c) Explain and Draw Types of stone Masonry
1) Rubble Masonry (Coursed, Un coursed)
2) Ashlars masonry (Fine tooled, Chamfered tooled)

4.2 Explain the construction of Brick **masonry** work.

Explain the general principles to be observed in brick masonry Construction.
a) Explain the term bond, course, header, and stretcher.
b) Draw Brick Masonry construction in English and Flemish Bond for 1 brick and 1 ½ Brick

5.0 Staircases

5.1 Explain good Locations for Staircases
5.2 Explain the Material used for stair cases
5.3 Explain and Draw the Types of Stair cases
a) Straight b) Quarter turn c) Half turn
d) Dog Legged e) Bifurcated f) Spiral
g) Circular

COURSE CONTENTS:

1.0Damp proof course

1.1 causes of Dampness
1.2 ill effects caused by dampness
1.3 Materials used for damp prevention
1.4 Horizontal D.P.C, Vertical DPC
1.5 D.P.C for basements, Floors, Roofs, Water tanks

2.0 Foundations

2.1 Types of soils and their behaviour
2.2 Bearing capacity of soils
2.3 Timbering of trenches
2.4 Shallow Foundations
a) Spread footing b) Combined footing
2.5 Deep foundations
a) Pile Foundation a) Single reamed b) Double reamed

3.0Form Work

3.1 Component parts of Shuttering- columns
3.2 Component parts of centering -slabs and beams
3.3 Scaffolding
Types of Scaffolding
a) Single Scaffolding
b) Double Scaffolding
c) Tubular Scaffolding

4.0Masonry work.

4.1 Stone masonry- principles and types

1) Rubble Masonry (Coursed, Un coursed)
2) Ashlars masonry (Fine tooled, Chamfered tooled)

4.2 Brick masonry - Bonds, Courses, Header, and Stretcher.

- English and Flemish Bond for 1 brick and 1 ½ Brick

5.0Stair cases

5.1 Location of Staircase
5.2 Material used for stair case
5.3 Types of Stair cases
a) Straight b) Quarter turn
c) Half turn d) Dog Legged
e) Bifurcated f) Spiral g) Circular

Exercises:

1) Draw the D.P.C. details
a) At plinth level b) At basement level c) At roof level d) Water tank
2) Draw the cross section of a load bearing wall at from foundation to parapet level and name all parts.
3) Draw the following foundations in detail.
a) Spread footing foundation b) combined footing c) Under reamed pile
4) Draw the following
a) Shuttering for Square column b) Shuttering for circular column

c) Single Scaffolding d) Double Scaffolding

5) Draw the plans of English Bond and Double Flemish Bond I brick and 11/2 brick thick wall meeting at corner showing alternate courses.

6) Draw the elevation and section of stone masonry was of R.R. Masonry coursed Rabble Masonry, Ashlars Masonry.
and label its parts and dimensions.

7) Draw the following staircases to any convenient scale
a) Straight b) Quarter turn c) Half turn d) Dog Legged
e) Bifurcated f) Spiral g) Circular

Reference Books:

1) MC Kay-Building construction -I, II, III & IV Volumes.
2) Berry-Building Construction - Volumes I, II, III and IV
3) S.C. Rangawala- Building Construction
4) N.R.R. Moorthy- Building Construction
5) S.P.Bindra & S.P.Arora- Building Construction
6) ISI- NBC
7) Shah, Kale and Patak – Building Construction.
8) B.C.Punmia – Building Construction.

Question paper pattern

Part-A: 20 marks, 4 questions 5 marks each, NO **CHOICE**- (15 Minutes each question)

Part-B: 40 marks, 4 questions out of 6 questions, 10 marks each, (30 Minutes each question)

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	period wise distribution of weightage				Mark wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1.	Damp proof Course	6	15			**6**		**3**	**3**	**6**	**3**
2.	Foundations	9	10			**9**		**2**	**2**	**4**	**2**
3.	Form Work	6	15		**3**	**3**		**3**	**3**	**6**	**3**
4.	Masonry &Partition	12	25		**3**	**9**		**3**	**6**	**13**	**3**
5.	Stair cases	12	15		**3**	**9**		**3**	**3**	**6**	**3**
	Total	45	80								

R-remember U-Understanding Ap-Application An-Analysing

INTERIOR AND LANDSCAPE DESIGN (C-20)

Course Title : INTERIOR AND LANDSCAPE DESIGN
Course Code : AA-308
Periods / Week : 03
Periods /Semester : 45

CO No	Topics	Course Outcomes
C01	AA-308.1 & 2	State human dimensions in various positions in order to design the furniture and layout plans.
C02	AA-308.3	Design individually the interiors of living, dining, bedroom, toilets and kitchen of a residential
C03	AA-308.4	State various landscaping elements and names of trees, plants, etc,
C04	AA-308.5	Draw site plan showing maximum possible landscape features for a small residence and park

Course Title: Interior and Landscape Design		
Course Objectives	(i) To understand human dimensions in various positions and apply in interior designing (ii) To ascertain the correct dimensions of the furniture. (iii) To know various landscaping elements. (iv) To design the furniture in residential interiors (v) To design a landscape layout plan of a small residence or a park	
Course Outcomes	C01	State human dimensions in various positions in order to design the furniture and layout plans.
	C02	Design individually the interiors of living, dining, bedroom, toilets and kitchen of a residential building.
	C03	State various landscaping elements and names of trees, plants, etc,
	C04	Draw site plan showing maximum possible landscape features for a small residence and park

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks		No of short ans. questions	No of essay ans. questions
			Part A	Part B		
A-INTERIOR DESIGN						
1.	Anthropometry	06	5	-	1	-
2.	Furniture	06	5	-	1	-

3.	Interior Designing-Residential building	18	-	25	-	1
B-LANDSCAPE DESIGN						
4.	Elements of landscape architecture	06	10		2	-
5.	Landscape Design	09	-	15	-	1
	Total:	45	60		4	2

Note:

- Two small drawing sheets to be issued for the examination.
- Duration of the examination is 3 hours (one session only)
- No choice in Part A and B
- **Part-A: 4 questions –each for 5 marks**
- **Part B: 2 questions**
  5th Question – 25 Marks, on interior design (from Major Topic no.3 showing layout plan and two sectional elevations)
  6th Question – 15 Marks, on landscape design **(**from Major topic no.5 showing layout plan

LEARNING OUTCOMES

Upon the completion of the subject the student shall be able to

A. INTERIOR DESIGN

1.0 Anthropometry

1.1 Explain various behavioural actions of human beings and dimensions.

1.2 Draw sketches for the above with detailed dimensions.

2.0 Furniture

2.1. Explain the dimensions of loose furniture used in residential buildings: sofa sets, dining table, chairs, double bed, single bed, bedside units, coffee table.

2.2. Explain the dimensions of fixed furniture used in residential buildings: base cabinets, working platforms, overhead cabinets, wardrobes, and cupboards.

3.0 Interior designing - Residential Buildings

3.1 Design and draw the interiors of a living room.

3.2 Design and draw the interiors of a bedroom.

3.3 Design and draw the interiors of a kitchen.

3.4 Design and draw the interiors of a toilet.

3.5 State the Design requirements of commercial interiors like restaurants, showrooms and hotel rooms

B. LANDSCAPE DESIGN

4.0 Elements of landscape architecture

4.1 Explain the following elements used in landscaping:

(a) Vegetation: plants, trees, shrubs, herbs, ground covers, hedges, flowering plants, flower beds, creepers, water plants, topiary, hanging plants.

(b) Water: water bodies, waterfalls, cascades, fountains, pools, ponds.

(c) Rocks: natural stones, dressed stones, rocks, gravel, sculptures,

(d) Land forms: earth mounds, sand pits, terraced land forms, pebbles, walkways, paved ways

(e) Furniture: benches, fencing, decks, gazebo, trellis, murals, garden lights.

4.2 List out botanical and common names for few of:
(a) Indoor plants
(b) Shrubs
(c) Flowering plants
(d) Hedges
(e) Ground covers
(f) Avenue plantation (trees)

5.0 Landscape design:

5.1 Explain to understand the landscaping of a residence in a given plot showing all the possible
landscape elements by naming each element specifically.

5.2 Explain to understand the landscaping of a small children park in a given site showing all the
possible landscape elements and playing areas by naming each element specifically

5.3 Explain the vertical landscaping in interiors and exteriors for residential buildings.

COURSE CONTENT

A. INTERIOR DESIGN

1.0. **Anthropometric data:**

1.1 Anthropometric data of Human being in various actions with dimensions.

2.0. **Furniture**

2.1 Loose furniture used in residential buildings: sofa sets, dining table, chairs, double bed, single bed, bedside units, coffee table.

2.2 Fixed furniture used in residential buildings: base cabinets, working platforms, overhead cabinets, wardrobes, and cupboards

3.0. Interior designing - Residential Buildings

3.1 Designing and drawing the interiors of a living room.
3.2 Designing and drawing the interiors of a bedroom.
3.3 Designing and drawing the interiors of a kitchen.
3.4 Designing and drawing the interiors of a toilet.
3.5 Requirements of commercial interiors

B. LANDSCAPE DESIGN

4.0. Elements of Landscape Design

4.1Various elements used in landscaping:
(a) Vegetation: plants, trees, shrubs, herbs, ground covers, hedges, flowering plants, flower beds, creepers, water plants, topiary, hanging plants.
(b) Water: water bodies, waterfalls, cascades, fountains, pools, ponds.
(c) Rocks: natural stones, dressed stones, rocks, gravel, sculptures,
(d) Land forms: earth mounds, sand pits, terraced land forms, pebbles, walkways, paved ways Furniture: benches, fencing, decks, gazebo, trellis, murals, garden lights.

4.2 Few botanical and common names of:
(a) Indoor plants
(b) Shrubs
(c) Flowering plants
(d) Hedges
(e) Ground covers
(f) Avenue plantation (trees)

5.0 L**andscape design:**

5.1 Landscape layout plan of a residence in a given plot showing all the possible landscape elements
by naming each element specifically.

5.2 Landscape layout plan of a small children park in a given site showing all the possible landscape
elements and playing areas by naming each element

5.3 Vertical landscaping layout plan for interiors and exteriors of residential buildings.

Exercises:

1.0. **Anthropometric data:**

1) Draw Anthropometric data of Human being in various actions with dimensions.
2) Draw Anthropometric data of reach dimensions of Human being with dimensions.

2.0. **Furniture**

3) Draw the loose furniture used in residential buildings: sofa sets, dining table, chairs, double bed, single bed, bedside units, coffee table in plan, elevation and section with proper dimensions.
4) Draw the fixed furniture used in residential buildings: base cabinets, working platforms, overhead cabinets, wardrobes, and cupboards

3.0 Interior Design-Residential Buildings:

5) Design and draw the interiors of a living room.
6) Design and draw the interiors of a bedroom.
7) Design and draw the interiors of a kitchen.
8) Design and draw the interiors of a toilet.

B. LANDSCAPE DESIGN

5.0 L**andscape design:**

9) Landscape layout plan of a residence in a given plot showing all the possible landscape elements
by naming each element specifically.

10) Landscape layout plan of a small children park in a given site showing all the possible landscape
elements and playing areas by naming each element.

11) Vertical landscape layout plan for residential buildings.

REFERENCE BOOKS

1. Time saver standard -Landscape Architecture.
2. Time saver standard (Interior Design)
3. V.N.R. Design.
4. Neufert's Architects data.
5. Shaw, Kale and Patki -Building drawing.
6. M.Pratap Rao- Principles and Practice of Interior Design.
7. Robert W Gill- Rendering with Pen and Ink.
8. Michael Laurie- Landscape Architecture.

Part-A: 20 marks ,4 questions,5 marks each, **NO CHOICE**
Part-B: 40 marks, Q5 carries 30 marks and Q6 carries 10 marks, **NO CHOICE.**

Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Anthropometry	6	5	3	3			**2**		**3**	
2	Furniture	6	5	**3**	**3**			**2**		**3**	
3	Interior Designing-Residential building	18	25		**6**	**12**			**10**	**15**	
4	Elements of landscape architecture	6	10	**3**	**3**			**5**		**5**	
5	Landscape Design	9	15			**9**			**5**	**10**	

R-remember
U-Understanding
Ap-Application
An-Analysing

COMPUTER AIDED DESIGN AND DRAUGHTING LAB-I (C-20)

Course Title : Computer Aided Design and Draughting Lab-I
Course Code : AA - 309
Periods / Week : 06
Periods /Semester : 90

CO No	Topic	Course Outcome
CO 1	AA-309.1	Explain the uses, importance, application of CADD software
CO 2	AA-309.2	Practice Basic and Presentation Commands of CADD
CO 3	AA-309.3	Draw simple graphics using CADD
CO 4	AA-309.4	Draw CADD plans, elevations, sections, site plan for different types of buildings

Course Title: COMPUTER AIDED DESIGN AND DRAUGHTING LAB-I		
Course Objectives	i) To understand CADD, its uses, importance and applications ii) To understand the Basic and Presentation Commands of CADD iii) To Draw simple graphics and Building plans, elevations, sections and site plans.	
Course Outcomes	**C01**	Explain the uses, importance, application of CADD software
	C02	Practice Basic and Presentation Commands of CADD
	C03	Draw simple graphics using CADD
	C04	Draw CADD plans, elevations, sections, site plan for different types of buildings

TIME SCHEDULE

Sl. No	Major Topics	No. of periods
1	Introduction to CADD.	02
2	CADD Commands	12
3	Simple graphics using CAD.	26
4	Building plans & Elevations	50
	Total	90

Upon the completion of the subject the student shall be able to

LEARNING OUTCOMES

1. 0 Introduction to CADD.

1.1 Explain the importance, application and uses of CADD.

1.2 Explain various other Architectural and Graphic Softwares.
1.3 Explain the basic settings and creating template.

2. 0 CADD Commands

2.1 Basic commands.

2.1.1 Explain Opening a drawing file, creating a new file, setting a drawing, exercise on limits.

2.1.2 Explain toolbars: Draw, Modify, Zoom, Osnap, Grid, Dimension, etc.,

2.2 Presentation Commands

2.2.1Explain Commands like Hatch, Libraries, Grouping, etc. to create presentation
drawing.

3.0 Simple graphics using CAD.

3.1 Draw Stool, chair, sofa, in plan, section and elevation with dimensions.

4.0 **Building plans& Elevations**

4.1 Draw the plan of a Two Bedroom House with cross & longitudinal sections and Four sides elevations and site plan with landscaping.

4.2 Draw the plan of an Architect's office with cross & longitudinal sections and Four sides elevations and site plan with landscaping.

COURSE CONTENT

1. 0 Introduction to CADD.

Importance, application and uses of CADD.
Architectural and Graphic Softwares.
Basic settings and creating template.

2. 0 CADD Commands

2.1Basic commands of CADD.

Opening a drawing file, creating a new file, setting a drawing, exercise on limits.
Toolbars: Draw, Modify, Zoom, Osnap, Grid, Dimension, etc.,

2.2Presentation Commands

Commands like Hatch, Libraries, Grouping, etc. to create presentation drawing.

3.0 Simple graphics using CAD.

Draw Stool, chair, sofa, in plan, section and elevation with dimensions.

4.0 **Building plans& Elevations**

a) Draw the plan of a Two Bedroom House with cross & longitudinal sections and Four sides elevations and site plan with landscaping.
b) Draw the plan of an Architect's office with cross & longitudinal sections and Four sides elevations and site plan with landscaping.

Note:

The exercises from chapter no: 3 and 4 should be submitted in hard copy in a A3 size portfolio for internal evaluation.

Note for maintaining CADD Lab-I

1. A separate laboratory should be established for CAD.
2. The lab should be equipped with sufficient computers with licensed latest CAD software along with required space, furniture, Interior and infrastructure.
3. The lab should be maintained well as per the standards and required funds to be provided for conducting regular class works, exams, stationery, repairs etc.,

REFERENCES BOOKS:

Any standard books of latest software on CADD 3D and Software Manuals relevant to the Subject.

AA-309 Computer Aided Design and Draughting Lab-I
Question paper pattern

Internal Exam 40 Marks
External exam 10 Marks reasoning+20 Marks Understanding + 30 Marks Practical

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction and Use of the CADD	**2**	**-**	**1**	**1**	**-**	**-**	**-**	**-**	**-**	**-**
2	Basic & Presentation Commands	**12**	**10**	**-**	**3**	**9**	**-**	**-**	**2**	**8**	**-**
3	Simple Graphics on CADD	**26**	**10**	**-**	**6**	**20**	**-**	**-**	**2**	**8**	**-**
4	Building plans & Elevations	**50**	**20**	**-**	**10**	**40**	**-**	**-**	**5**	**15**	**-**
Internal Marks 40 Marks			**40**								
End Exam for 60 Marks								**10**	**20**	**30**	

R-remember
U-Understanding
Ap-Application
An-Analyzing

SURVEYING PRACTICALS(C-20)

Course Title : Surveying Practical's
Course Code : AA-310
Periods/Week : 04
Periods/Semester : 60

CO No	Topic	Course Outcomes
CO1	AA-310.1	List out different instruments used for chain survey and apply standard Practices to perform chain survey in the field and to plot from field data.
CO2	AA-310.2	Apply Principles to Perform compass survey and record the measurements in a field book and plot from field data
CO3	AA-310.3	Apply standard Practices to perform different methods of levelling
CO4	AA-310.4	Apply the knowledge of Theodolite in different operations in architectural projects.
CO5	AA-310.5	Apply the knowledge of Total station in different operations.

Course Objectives	(i) To get knowledge about conventional signs, folding, unfolding and set up of the surveying instruments (ii) To state the parts of various surveying instruments (iii) To understand temporary adjustments and find errors of various surveying instruments (iv) To know how to record measurements on field book , plotting from measurements and calculate the areas, included angles, horizontal and vertical angles	
Course Outcomes	C01	List out different instruments used for chain survey and apply standard Practices to perform chain survey in the field and to plot from field data.
	C02	Apply Principles to Perform compass survey and record the measurements in a field book and plot from field data
	C03	Apply standard Practices to perform different methods of levelling
	C04	Apply the knowledge of Theodolite in different operations in architectural projects.
	C05	Apply the knowledge of Total station in different operations.

TIME SCHEDULE

S. No.	Major Topics	No. of Periods
1	Chain surveying	10
2	Compass Surveying	10
3	Levelling	15
4	Theodolite Surveying	10
5	Total Station	15
Total		**60**

LERNING OUTCOMES:

Upon completion of the course, the student should be able to

1.0 Chain surveying

1.1 Fold and unfold a chain.
1.2 Perform chaining operations on level ground between two given stations.
1.3 Perform chaining operations along a line when a high ground intervenes to prevent inter visibility of ends of line.
1.4 Set out a right angle.
1.5 Take offsets and measures the same
1.6 Perform triangulation survey of a given area with chain and cross staff.
1.7 Record the measurements in a field book.
1.8 Draw conventional signs used in survey work
1.9 Plot the Survey from field measurements.
1.10 Calculate the area enclosed.

2.0 Compass Surveying

2.1 Identify the parts of a prismatic Compass.
2.2 Set up the compass at a station.
2.3 Take readings of bearings.
2.4 Perform a closed compass survey with Compass and Chain.
2.5 Record angular and linear measurements in field book.
2.6 Perform an open traverse with compass and chain.
2.7 Plot the traverse from field data after adjusting for closing error.

3.0 Levelling

3.1 Perform temporary adjustments for taking observations.
3.2 Take levels for differential levelling.
3.3 Take levels for check levelling.
3.4 Reduce the levels from field data.
3.5 Take L.S. and C.S for alignment of Road.
3.6 Locate contour points by direct method

4.0 Perform Theodolite Surveying

4.1 Perform temporary adjustment.
4.2 Measure horizontal angles and vertical angles
4.3 Record the observations in the field book.
4.4 Perform theodolite survey.

5.0 Total Station

5.1 State component parts, accessories and functions Total Station.
5.2 Set-up Total Station over ground station and measure the distance between two given points.
5.3 Measure area of given field.
5.4 Conduct traversing survey (closed Traverse).
5.5 Find Height and width of an elevated object.

COURSE CONTENT

1.0 Chain Surveying

1.1 Practice in unfolding and folding of a chain. Ranging and chaining of lines on level ground and recording in field book.
1.2 Chaining a line involving indirect ranging.
1.3 Measurement of land areas – chain triangulation and cross staff methods.
1.4 Chain triangulation around the building covering a small area with other details taking

offsets and recording.

2.0 Compass Surveying

2.1 Setting up the compass – observations of bearings calculation of included angles.

2.2 Traversing with prismatic compass – and chain – closed Traverse – Recording.

2.3 Traversing with prismatic compass and chain open traverse and recording.

3.0 Levelling

3.1 Study of dumpy level, levelling staff and Temporary adjustments of level. Taking levels of various points and booking of a level field book.

3.2 Differential or Fly levelling, reducing levels by height of collimation and Rise & Fall method.

3.3 Differential levelling involving inverted level and Reciprocal levelling.

4.0 Theodolite surveying

4.1 Study of transit Theodolite - Temporary adjustments of Theodolite.

4.2 Measurement of horizontal angles by reiteration method.

4.3 Measurement of horizontal angles by repetition method and Measurement of vertical angles.

5.0 Field Exercises using Total Station.

5.1 Study of the Total Station equipment.

5.2 Station setup and measuring distance.

5.3 Measurement of area.

5.4 Traversing with total station.

5.5 Height and width of the elevated object.

Plotting:

Plotting of contours from radial methods& block levelling.

Plotting Exercises

a) Conventional signs in Surveying…….1 Exercise

b) Plotting of perpendicular and oblique Offsets……1 Exercise

c) Plotting of land surveys – Chain and cross-staff Surveying – Calculation of areas……1 Exercise

d) Plotting of chain triangulation Surveying of small areas around Buildings……1Exercise

e) Plotting of open traverse by Compass Surveying and locating details……2 Exercise.

Total	6 Exercises

REFERENCE BOOKS

1	B.C. Punmia	: Surveying I& II
2	S.K. Husain	: Surveying
3	T.P. Kanetkar	: Surveying and levelling I& II
4	A. V.R.J. Sharma and Kamala	: Surveying - I & II
5	C. VenkatRamaiah	: Text book of surveying

AA-310 Surveying Practical's
Question paper pattern
Internal Exam 40 Marks
External exam 10 Marks reasoning+20 Marks Understanding + 30 Marks Practical

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Chain surveying	10	5	**5**	**5**	**-**	**-**	**-**	**-**	**5**	**-**
2	Compass Surveying	10	10		**5**	**5**	**-**	**-**	**2**	**8**	**-**
3	Levelling	15	5		**5**	**10**	**-**	**-**		**5**	**-**
4	Theodolite Surveying	10	10		**2**	**8**	**-**	**-**	**2**	**8**	**-**
5	Total Station	15	10		**3**	**12**			**2**	**8**	
Internal Marks 40 Marks			40								
End Exam for 60 Marks								**10**	**20**	**30**	

R-remember
U-Understanding
Ap-Application
An-Analyzing

IV SEM

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)

SCHEME OF INSTRUCTIONS AND EXAMINATIONS
IV SEMESTER (C-20)

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-401	Engineering Mathematics-III	03	-	45	03	20	80	100
AA-402	Environmental Engineering	04	-	60	03	20	80	100
AA-403	History of World Architecture	04	--	60	03	20	80	100
AA-404	Theory of Structures	06	-	90	03	20	80	100
AA-405	Quantity Survey	04	--	60	03	20	80	100
PRACTICAL								
AA-406	Architectural Design – II	--	06	90	09	40	60	100
AA-407	Building Construction Drawing-II	--	03	45	03	40	60	100
AA-408	Communication Skills	--	03	45	03	40	60	100
AA-409	Computer Aided Design and Draughting Lab-II	--	06	90	03	40	60	100
AA-410	Model Making Lab	--	03	45	03	40	60	100
	Totals	**21**	**21**	**630**	**--**	**300**	**700**	**1000**

C-20

ENGINEERING MATHEMATICS-III

Course Code	Course Title	No. of Periods/week	Total No. of periods	Marks for FA	Marks for SA
AA-401	Engineering Mathematics-III	3	45	20	80

S.No.	Unit Title	No. of periods	COs mapped
1	Higher order Linear Differential equations with constant coefficients	15	CO1
2	Laplace Transforms	18	CO2
3	Fourier Series	12	CO3
	Total Periods	45	

Course Objectives	(i) To learn the principles of solving differential equations of second and higher order. (ii) To comprehend the concept of Laplace transformations and inverse Laplace transformations. (iii) To understand the concept of Fourier Series expansion of functions.

Course Outcomes	CO1	Solve homogeneous and non-homogeneous differential equations of second and higher order.
	CO2	Find Laplace and inverse Laplace transforms of various functions.
	CO3	Expand given functions as Fourier series and half- range Fourier Sine and Cosine series.

LEARNING OUTCOMES

Unit-I

Differential Equations of higher order

C.O. 1 Solve homogeneous and non-homogeneous differential equation of second and higher order.

L.O 1.1 Solve Differential equations of the type $(aD^2 + bD + c)\, y = 0$ where a, b, c are real numbers and provide examples.

1.2 Solve higher order homogeneous differential equations with constant coefficients and provide examples.

1.3 Define complementary function, particular Integral and general solution of a non-homogeneous differential equation.

1.4 Describe the methods of solving $f(D)\, y = X$ where $f(D)$ is a polynomial of n^{th} order and X is a function of the forms $k,\ e^{ax},\ \sin ax, \cos ax,\ x, x^n$ and their linear combinations where n is a positive integer, with examples.

Unit-II

Laplace Transforms

C.O. 2 Find Laplace and inverse Laplace transforms of various functions.

L.O. 2.1 Define Laplace Transform and explain the sufficient conditions of existence of Laplace

Transform
2.2. Obtain Laplace transforms of standard functions and solve simple problems.
2.3 Write the properties of Laplace Transform – Linearity property, First shifting theorem (without proof) and Change of Scale property and solve simple problems.
2.4. Write the Laplace Transform of unit step function and second shifting theorem (without proof) and solve simple problems.
2.5. Write formulae for Laplace transform of functions with multiplication by t^n and division by t, Laplace transform of derivatives, evaluation of some definite integrals using Laplace Transforms and solve simple problems.

Syllabus for Unit test-I completed

2.6 Define inverse Laplace Transform, obtain inverse Laplace Transforms of standard functions and solve simple problems.
2.7 Write linearity property, first and second shifting theorems (without proof), change of scale property of inverse Laplace transform and solve simple problems.
2.8 Write inverse Laplace transforms of derivatives and integrals and solve simple problems.
2.9 Write inverse Laplace transforms of functions with multiplication by s and division by s and solve simple problems.
2.10 Write inverse Laplace transforms of functions using partial fractions and solve some simple problems.
2.10 Define convolution of two functions, state convolution theorem (without proof) and solve simple problems.

Unit-III
Fourier series

C.O. 3 Expand given functions as Fourier series and half- range Fourier Sine and Cosine series

L.O. 3.1 Define the orthogonality of functions in an interval.
3.2 Define Fourier series of a function in the intervals $(c,\ c+2\pi)$ and $(c,\ c+2l)$ and write the Euler's formulae for determining the Fourier coefficients.
3.3 Write sufficient conditions for the existence of Fourier series expansion of a function.
3.4 Find Fourier series of simple functions in the range (0 , 2π) and (-π , π)
3.5 Write Fourier series for even and odd functions in the interval $(-\pi,\ \pi)$ and $(-l, l)$ expand simple functions.
3.6 Write Fourier series expansion of a function over the interval (0, 2l) and $(-l,\ l)$ and expand simple functions.
3.7 Write half-range Fourier sine and cosine series of a function over the interval (0, π) and $(0,\ l)$ and expand simple functions.

Syllabus for Unit test-II completed

Course Content

Unit I: Differential Equations of higher order

1. Solve Homogenous linear differential equations with constant coefficients of order two and higher with emphasis on second order.
2. Solve Non-homogenous linear differential equations with constant coefficients of the form f(D)y = X where X is in the form k(constant), e^{ax}, sinax, cosax, x^n, where n is a positive integer, finding complimentary function, particular integral and general solution.

Unit II: Laplace Transforms

3. Definition, sufficient conditions for existence of LT, LT of elementary functions, linearity property, state first shifting theorem, change of scale property, multiplication by t^n, division by t, LT of derivatives and integrals, LT of unit step function, state second shifting theorem, inverse Laplace transforms- state shifting theorems and change of scale property, multiplication by s^n and division by s, derivatives, integrals, examples of inverse LT using partial fractions, state convolution theorem with simple examples.

Unit III: Fourier series

4. Orthogonality of trigonometric functions, Representation of a function in Fourier series over the interval $(c\ ,\ c+2\pi)$ and $(c\ ,\ c+2l)$, Euler's formulae , sufficient conditions for existence of Fourier series expansion of a function, Fourier series expansion of basic functions limited to k(constant), $x, x^2, \sin ax, \cos ax, e^{ax}$ and their combinations over the intervals $(0,\ 2\pi),(-\pi,\pi),(0,\ 2l),(-l,l)$, Fourier series for even and odd functions over $(-\pi,\pi)$ and $(-l,l)$, Fourier half-range sine and cosine series over $(0,\ \pi)$ and $(0,\ l)$

Textbook:

Engineering Mathematics-I, a textbook for first year diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers
2. M.R. Spiegel, Schaum's Outline of Laplace Transforms, Schaums' Series
3. M.Vygodsky, Mathematical Handbook: Higher Mathematics, Mir Publishers, Moscow.

Blue print

S. No	Chapter/ Unit title	No of Periods	Weightage allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
				R	U	Ap	An	R	U	Ap	An	
1	Unit – I Higher order Linear Differential equations with constant coefficients	15	28	11	11	3	3	2	2	1	1	CO1
2	Unit - II Laplace Transforms	18	33	11	11	11	0	2	2	2	0	CO2

3	Unit - III Fourier Series	12	19	3	3	3	10	1	1	1	1	CO3
Total		**45**	**80**	**25**	**25**	**17**	**13**	**5**	**5**	**4**	**2**	

R: Remembering Type : 25 Marks
U: understanding Type : 25 Marks
Ap: Application Type : 17 Marks
An: Analysing Type : 13 Marks

C-20
Engineering Mathematics – III
Unit Test Syllabus

Unit Test	Learning Outcomes to be Covered
Unit Test-I	From LO 1.1 to 2.5
Unit Test-II	From LO 2.6 to 3.7

ENVIRONMENTAL ENGINEERING(C-20)

Course title : Environmental Engineering
Course code : AA- 402
Periods/week : 04
Periods/Semester : 60

CO No	Topics	Course Outcomes
C01	AA-402.1	Explain surface and subsurface sources of water and quality of water
C02	AA-402.2	Define the basic terminology and explain fittings, fixtures used in water supply
C03	AA-402.2	Explain water distribution system and execution of internal plumbing system and construction of storage tanks.
C04	AA-402.2	Explain Hot water supply for residential buildings
C05	AA-402.3	Explain the Quantity of sewage, Sewerage system and Sewer appurtenances for residential buildings
C06	AA-402.3	Explain the Sewerage treatment methods and Solid waste disposal
C07	AA-402.3	Explain the Drainage and sanitation in buildings and Draw drainage plan and section of a building showing house drainage arrangement
C08	AA-402.3	Explain Storm water drainage and Draw Rain water harvesting pit

Course Objectives	(i) To know the sources of water and Quality of water. (ii) To know the water supply and sanitary fittings and fixtures. (iii) To understand the importance of residential water supply distribution system and construction of water storage system. (iv) To know the sewerage disposal system, sewer materials and sewer appurtenance.	
Course Outcomes	C01	Explain surface and subsurface sources of water and quality of water
	C02	Define the basic terminology and explain fittings, fixtures used in water supply
	C03	Explain water distribution system and execution of internal plumbing system and construction of storage tanks
	C04	Explain Hot water supply for residential buildings
	C05	Explain the Quantity of sewage, Sewerage system and Sewer appurtenances for residential buildings
	C06	Explain the Sewerage treatment methods and Solid waste disposal
	C07	Explain the Drainage and sanitation in buildings and Draw drainage plan and section of a building showing house drainage arrangement
	C08	Explain Storm water drainage and Draw Rain water harvesting pit

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	Part-A No of short ans. questions	Part-B No of 8 marks questions	Part-C No of essay ans. question
1.	Sources of Water	10	14	2	1	01
2	Water Supply & Fixtures					
	a. Introduction	2	14	2	1	
	b. House service Connection	2				
	c. Pipes used for water Supply	2				
	d. Design of water Supply Distribution System	6				
	e. Provision of storage tanks in buildings	2	17	3	1	
	f. Execution of internal plumbing system	2				
	g. Construction of masonry overhead storage tank	6				
	h. Water supply fittings & fixtures	2				
	i. Hot water supply	2				
3	**Drainage and sanitation**					
	a. Introduction	4	14	2	1	
	b. Quantity of sewage	2				
	c. sewerage system	2				
	d. sewerage appurtenances	4				
	e. Sewerage treatment methods	4	11	1	1	
	g. Drainage and sanitation in buildings	5				
	f. Storm water drainage	3				
	From above all topics	--	10	--	--	
	Total	60	80	10	05	01

LEARNING OUTCOMES:

Upon completion of the course the student should be able to

1.0 SOURCES OF WATER

1.1 Understand the meaning of the term plumbing system
1.2 State the importance of water supply
1.3 State the surface and underground sources of water supply
1.4 Explain the standard tests for analysing water for drinking purposes as per ISI

2.0 WATER SUPPLY AND FIXTURES

2.1 Know the terminology
2.2 State the importance of House service connection
2.3 State the pipes used for water supply
2.4 Explain the design of water supply distribution system
2.5 Know the provision of storage tanks in buildings
2.6 Explain the execution of internal plumbing system
2.7 Explain the construction of water storage tanks

2.8 State water supply fittings and fixtures
2.9 State the importance of hot water supply

3.0 DRAINAGE AND SANITATION

3.1 State the meaning of the terms- drainage and sanitation
3.2 Differentiate between sewage, sill age, sewerage system, and sewer
3.3 Explain the systems of sewage collection
3.4 state the sewerage systems
3.5 Estimate sanitary sewage and storm water flow from a residential building
3.6 State various sewer materials and laying of sewer lines
3.7 Explain the construction and function of a manhole
3.8 Draw sketches of septic tank with a soak pit and know its operation
3.9 Explain drainage arrangement for a single and multi-storey building
3.10 State the aims and principles of building drainage and its requirements
3.11 Explain the arrangement of sanitary fittings and house drainage arrangement
3.12 Describe different sanitary fittings
3.13 Explain procedures involved in inspection, testing and maintenance of sanitary fittings
3.14 Explain Roof drainage
3.15 Sketch rainwater harvesting pit

COURSE CONTENTS

1.0 SOURCES OF WATER

1.1.0 Introduction to water supply, importance of pure water, use of domestic purpose, surface and sub surface sources of water such as Lakes and streams, Rivers, Storage reservoirs, infiltration wells, infiltration galleries, springs and their types, wells and their types, Define the terms Water table, Aquifers, Yield of well,

1.2.0Quality of water- State the importance of pure water, use of domestic purpose, Write classification of impurities of water and explain analysis of water like Physical tests, chemical tests and Bacteriological tests.

2.0 WATER SUPPLY AND FIXTURES

2.1.0 **Introduction**: Scope, Terminology – communication pipe, consumers pipe, supply pipe, distributing pipe, systems of supply, upward distribution system, down take supply system, choice of the supply system to high rise buildings, pump capacity.

2.2.0 **House service connection** – general, house service connection plan & section, ferrule, goose neck, stop valve, metering of house service connection, water meter installation and water meter maintenance

2.3.0 **Pipes used for water supply** – metallic pipes, cement pipes and plastic pipes, strength of pipes, water carrying capacity, loss in capacity in distribution lines, life and durability of pipe, ease of transportation

2.4.0 **Design of water supply distribution system** – Introduction, water requirement for residential buildings and non-residential, sizes of the distribution pipes for residential building, typical water distribution system

2.5.0 **Provision of storage tanks in buildings** – introduction, capacity of overhead storage tank, underground storage tank, storage of water for fire fighting

2.6.0 **Execution of internal plumbing system** – Introduction, galvanized iron (GI) pipes, thickness and weight of GI pipes

2.7.0 **Construction of masonry overhead storage tanks** – Introduction, size of the tank, Construction of tank with masonry and polyethylene tanks, construction of underground water tank and pump house with detailed drawings

2.8.0 **Water supply fittings and fixtures** – stop valve, sizes, bib tap, gate valve, ball

valve, drinking water fountain, fire hydrant landing valves for nozzles, installation of fire hydrant, landing valves

2.9.0 **Hot water supply** – systems of hot water flow, instantaneous system, storage system, rate of flow, Storage capacity, lagging

3.0 Drainage and Sanitation

3.1.0 Introduction - Meaning of the term, Sanitation, drainage, refuse, sewage and types of sewage, garbage, storm water, subsoil water, sullage, sewer, sewerage, methods of carrying refuse of Conservancy system and water carriage system, systems of sewerage like Separate system, combined system, partially separate system, Objectives of sewerage

3.2.0 Quantity of sewage (residential buildings) - Limiting velocities of sewers, Gradient of sewers, diameter of pipes, Rain/storm water Drainage, Types of surface drains

3.3.0 Sewerage system - Sewer materials, laying of sewers – setting out alignment and gradient, Excavation of trenches, laying and jointing, Testing, Back filling

3.4.0 Sewer appurtenances - sewer appurtenances like Catch basins, clean outs, Drop manholes and Manholes, explain the design, construction, classification, function of a manhole, Explain Design of a septic tank with a soak pit for a given quantity of sewage and Draw Plan and cross section Manholes – location, objects size, construction, Types – drop manhole and sketches of Sewer appurtenances

3.5.0 Sewerage treatment methods - Septic tank – construction and operation, Design of a septic tank with a soak pit for a given quantity of sewage Draw Plan and cross section

3.6.0 Drainage and sanitation in buildings - Aims of building drainage Requirements of good drainage system in buildings, Preliminary data for design, Principles of plug and design of house drainage, layout of sanitary fittings to house drainage arrangements – Draw layout plan Pipes used in drainage arrangement -Soil pipes, waste pipes, ventilating pipes, Plumbing systems - single stack, - pipe, two - pipe system, Drainage appurtenances – clean outs, floor drains, Fitting and fixtures, closets, flushing cisterns, urinals and Inspection chambers, Inspection of building drainage system, testing, maintenance.

3.8.0 Storm water drainage –Natural infiltration, combined system, Roof drainage, sketch of Rain water harvesting pit

REFERENCE BOOKS

1. M.M.Goyal :Handbook of building construction
2. Rangawala :Public health engineering
3. Duggal :Water supply and sanitary engineering
4. N.Srinivasulu : Environmental engineering
5. Birdi :Water supply and sanitary engineering
6. B.C.Punnmia :Building construction
7. Bindra and Arrora :Building construction
8. N. Ramachadraiah :Environmental engineering

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 2.9
Unit Test - II	From3.1 to 3.15

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Mark wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Sources of Water	10	14		**10**			**3**	**11**		
	a. Introduction	2									
	b. House service Connection	2									
	c. Pipes used for water Supply	2	**14**		**12**				**14**		
	d. Design of water Supply Distribution System	6									
2	e. Provision of storage tanks in buildings	2									
	f. Execution of internal plumbing system	2			**14**			**3**	**14**		
	g. Construction of masonry overhead storage tank	6	**17**								
	h. Water supply fittings & fixtures	2									
	i. Hot water supply	2									
3	a. Introduction	4									
	b. Quantity of sewage	2									
	c. sewerage system	2	14		**12**			**3**	**11**		
	d. sewerage appurtenances	4									
	e. Sewerage treatment methods	4									
	g. Drainage and sanitation in buildings	5	**11**		**12**			**3**	**8**		
	f. Storm water drainage	3									
	From above all topics		**10**								**10**

R-remember U-Understanding Ap-Application An-Analysing

HISTORY OF WORLD ARCHITECTURE (C-20)

Course Title : History of World Architecture
Course Code : AA-403
Periods / Week : 04
Periods /Semester : 60

CO No	Topics	Course Outcomes
C01	AA-403.1,2,3	Explain Egyptian, Greek and Roman architecture by listing two important structures each, and study in detail with sketches.
C02	AA-403.4,5	Explain the Byzantine early Christian and Gothicarchitecture by listing one example each and study in detail with sketches.
C03	AA-403.6	Explain the English and Italian renaissance architecture detail study of one structure each.

Course Title: History of World Architecture		
Course Objectives	(i) To know the architecture and construction techniques of ancient periods that evolved all over the world. (ii) To understand the influences on architecture based on the climatic, geographical, geological and religious aspects. (iii) To identify important structures, practice the sketches in the sketch books	
Course Outcomes	C01	Explain Egyptian, Greek and Roman architecture by listing two important structures each, and study in detail with sketches.
	C02	Explain the Byzantine early Christian and Gothic architecture by listing one example each and study in detail with sketches.
	C03	Explain the English and Italian renaissance architecture detail study of one structure each.

TIME SCHEDULE

Sl. No	**Major Topics**	**No. of periods**	**Weightage of Marks**		**Part-A No of short ans. questions**	**Part-B No of essay ans. questions**	**Part-C essay question**
			Part A	**Part B**			
1.	Egyptian Architecture	8	3	8	1	1	01
2	Greek Architecture	10	6	8	2	1	
3	Roman Architecture	10	6	8	2	1	
4.	Early Christian and Byzantine Architecture	12	3	8	1	1	
5.	Gothic architecture	8	6	8	2	1	
6.	Renaissance Architecture	12	6		2		
	From above all topics	--	**Part- C 10 marks**		--	--	
	Total:	**60**	**80**		**10**	**5**	**01**

Note: *A Sketch book has to be maintained by the student*

LEARNING OUTCOMES:

Upon completion of the course, the student should be able to

1.0 Egyptian Architecture

1.1 Explain the Geographical, Geological, Climatic and Religious influence on Egyptian Architecture

1.2 Explain the Architectural Characters of Egyptian Architecture

1.3 Sketch and Explain Royal Pyramid of Cheops

1.4 Sketch and Explain the temple of Khons, Karnak.

2.0 Greek Architecture

2.1 Explain the Geographical, Geological, Climatic and ReligiousInfluence on Greek Architecture.

2.2 Explain the Architectural characters of Greek architecture.

2.3 Sketch and Explain the Order – Doric, Ionic and Corinthian

2.4 Sketch and Explain the temple of Parthenon

2.5 Sketch and Explain the open – air theatre, Epidauros.

3.0 Roman Architecture

3.1 Explain the Geographical, Geological, Climatic and Religious influence on Roman Architecture.

3.2 Explain the Architectural characters of Roman architecture

3.3 Sketch and explain the order – Tuscan and composite order

3.4 Sketch and explain the Pantheon temple.

3.5 Sketch and explain the colosseum, Rome.

4.0 Early Christian and Byzantine architecture.

4.1 Explain Early Christian architectural characteristics.

4.2 Sketch and explain the evolution of early basilican church plan.

4.3 Sketch and explain St. Sophia, Constantinople.

5.0 Gothic architecture.

5.1 Explain architectural characteristics of Gothic architecture.

5.2 Explain Gothic architecture elements like pointed arch, flying buttress and traceried windows.

5.3 Explain Reims cathedral

6.0 Renaissance Architecture

5.1 Explain the planning of spacious renaissance structures.

5.2 Explain the architectural characteristics of Italian renaissance.

5.3 Sketch and Explain Saint peter cathedral, Rome.

5.4 Sketch and Explain Saint Paul cathedral, London of English renaissance.

COURSE CONTENTS:

1.0 Egyptian Architecture:

Factors - Geographical, geological, climatic and Religious that influenced Egyptian Architecture – Architectural characters – Pyramid of Cheops, Gizeh – Temple of Khons at Karnak.

2.0 Greek Architecture:

Factors- geographical, geological, climatic and Religious that influenced Greek Architecture – Architectural character – Orders of Doric, Ionic and Corinthian, temple of Parthenon, open – air theatre, Epidauros.

3.0 Roman Architecture:

Factors like geographical, geological, climatic and Religious that influenced Roman Architecture – Architectural character – Orders of Tuscan and Composite – temple of Pantheon – Colosseum – Rome.

4.0 Early Christian and Byzantine Architecture

Early Christian architectural character – Basilican church plan

Byzantine Architectural character

Features of St. Sophia, Constantinople explaining the elements like pointed arch, flying buttresses and traceried windows.

5.0 Gothic architecture.

Architectural characteristics of Gothic architecture.

Gothic architecture elements like pointed arch, flying Buttress and traceried windows

Architectural features of Reims cathedral

6.0 Renaissance Architecture

Architectural characteristics of Italian renaissance. Saint peter cathedral, Rome and Saint Paul cathedral, London of English renaissance.

REFERENCE BOOKS:

1. Banister Fletcher -History of Architecture.
2. G.K.Hirasker- World Architecture.
3. Satish Grover- Indian Architecture.
4. Haasan, Uddin,Khana- Charles Correa.
5. Laurie Baker by Penguin Publishers, Delhi.

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 3.5
Unit Test - II	From 4.1 to 6.4

Sl.no	Chapter name	Periods allocated	**Weightage of Marks allotted**	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Egyptian Architecture	8	11	2	2	3	1	7	1	2	1
2	Greek Architecture	10	14	**3**	**3**	**3**	**1**	**8**	**1**	**3**	**2**
3	Roman Architecture	10	14	**3**	**3**	**3**	**1**	**8**	**1**	**3**	**2**
4	Early Christian and Byzantine Architecture	12	11	**4**	**3**	**4**	**1**	**7**	**1**	**2**	**1**
5	Gothic architecture	8	20	**4**	**4**	**10**	**2**	**11**	**3**	**3**	**3**
6	Renaissance Architecture	12									
	From above all topics		**10**	**-**	**-**	**-**	**-**			**5**	**5**
		60	**80**								

R-remember U-Understanding Ap-Application An-Analysing

THEORY OF STRUCTURES (C-20)

Course Title : THEORY OF STRUCTURES
Course Code : AA-404
Periods/Week : 06
Periods/Semester : 90

CO No	Topic	Course Outcomes
CO 1	AA-404.1	Explain concepts of shear force and bending moments, Computes the SF, BM values and Draws the SFD and BMD for beams.
CO 2	AA-404.2	Derive formula for simple bending and solves problems.
CO 3	AA-404.3	Gain the knowledge about shear distribution across the cross of various types of beams.
CO 4	AA-404.4	Calculate the load carrying capacity of a column using Rankine's and Euler's formulae for different end conditions.

Course Title: THEORY OF STRUCTURES		
Course Objectives	(i) Understand the effect of loading on beams, analyses Shear Force and Bending moment of simple beams. (ii) Understand the concepts of bending Stresses, Shear Stresses in beams. (iii) Understand the effective lengths and load carrying capacity of various types of columns.	
Course Outcomes	C01	Explain concepts of shear force and bending moments, Computes the SF, BM values and Draws the SFD and BMD for beams.
	C02	Derives formula for simple bending and solves problems.
	C03	Gains the knowledge about shear distribution across the cross of various types of beams.
	C04	Calculates the load carrying capacity of a column using Rankine's and Euler's formulae for different end conditions.

TIME SCHEDULE

Sl.No	Major Topics	No. of Periods	Weightage of Marks	No of Part-A short ans. Questions	No of Part-B questions	No of Part-C Essay questions
1	Shear Force & Bending moment	25	25	03	02	01
2.	Bending Stresses in Beams	25	17	03	01	

3.	Shear Stresses in Beams	25	14	02	01	
4.	Columns and Struts.	15	14	02	01	
	From above all Topics	--	10	--	--	
	Total	**90**	**80**	**10**	**05**	**01**

LEARNING OUTCOMES

Upon the completion of the Course the student will be able to

1.0 Shear Force and Bending Moment

1.1 Determine shear force and Bending Moment on simple Beams Analytically.

1.2 Define different types of beams and loading, Cantilevers, simply supported, overhanging, fixed and continuous beams –Types of loads - point load uniformly distributed load.

1.3 Explain terms: Shear Force, Bending moment and point of contra flexure

1.4 Explain the reactions at rollers, hinged and fixed supports.

1.5 Determine shear Forces and Bending Moment for simple cases of loading analytically and sketching S.F.D and BMD for simply supported beams, cantilevers.

1.6 Explain relationship between rate of loading, shear force and Bending Moment.

2.0 Bending stresses in beams.

2.1 Explain terms: Neutral axis, Modulus of section, Moment of resistance

2.2 State the assumptions made in the theory of simple bending.

2.3 Derive the formula for simple bending – Explain bending stress distribution.

2.4 Solve problems on theory of simple bending.

3.0 Shear stresses in beams

3.1 Explain shear distribution across rectangular, solid circular and I section.

3.2 Determine shear stress at any layer in rectangular sections and I section.

4.0 Columns and struts

4.1 State the effective lengths of columns for different end conditions.

4.2 Distinguish between Long and short columns.

4.3 Calculate the Slenderness ratio of a column.

4.4 Calculate the load carrying capacity of a column using Rankine's and Euler's formula.

COURSE CONTENTS

1.0 Shear force and Bending Moment

Beams – Types of beams-cantilevers-simply supported – over hanging– fixed and continuous.

Types of supports – roller – hinged – fixed.

Significance of S.F and B.M. at a section.

Calculation of S.F. and B.M values at different sections for cantilever, simply supported beams, under point loads and uniformly distributed loads, position and significance of points of contra flexure.

Drawing S.F. and B.M diagrams by analytical methods location of points of contra flexure.

Relation between rate of loading SF and BM.

2.0 Bending Stresses in Beams.

Theory of simple Bending-Assumptions-Neutral Axis-Bending Stress Distribution-Moment of resistance-curvature of Beams-Bending equation-strength of Beams-Rectangular, circular, and L sections practical applications- simple problems.

3.0 Shear Stresses in Beams

Shear stress in beams- Distribution of shear stress diagrams for various beam sections such as rectangular, solid circular and I sections (Derivation of formula not required.)

4.0 Columns and struts.

Short and long columns - Axial loading only on Solid circular, Rectangle and I section columns – different end conditions - Effective length, radius of gyration. slenderness ratio - calculation of safe load on columns by Euler's and Rankine's formula - strength of columns-problems.

REFERENCE BOOKS

1. Ramamurtham -Strength of Materials.
2. B.C.punmia -S.M and T.S.
3. Srinivasulu -S.M and T.S
4. R.S. Khurmi -Strength of Materials.
5. D.S. Prakashrao -Introduction to strength of materials.
6. D.S.Prakashrao -Strength of Materials (A practical approach) Vol-I.

Syllabus to be covered for Unit Test-I & Unit Test-II of AA-404 Theory Of structures (C-20)

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 2.3
Unit Test – II	From 2.4 to 4.4

Blue Print of a question paper AA-404 THEORY OF STRUCTURES(C-20)

Part-A: 30 marks ,10 questions,3 marks each, **NO CHOICE**-60 minutes (6 Minutes each question)

Part-B: 40 marks, 5 questions, 8 marks each, **EITHER OR TYPE**-90 minutes (18 Minutes each question)

Part-C: 10 marks 1 question-30 minutes **(Higher Order Question)**

Sl.no	Chapter name	Periods allocated	**Weightage of Marks allotted**	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Shear Force & Bending moment	25	25	2	10	3	10	3	10		12
2	Bending Stresses in Beams	25	17	**3**	**10**	**2**	**10**	**3**	**5**		**9**
3	Shear Stresses in Beams	25	14	**3**	**10**	**2**	**10**	**3**	**6**		**5**
4	Columns and Struts.	15	14	**2**	**6**	**1**	**6**	**3**	**6**		**5**
	From above all topics		**10**	**-**	**-**	**-**	**-**			**5**	**5**
		90	**80**								

R-remember U-Understanding Ap-Application An-Analyzing

QUANTITY SURVEY (C-20)

Course Title : Quantity survey
Course Code : AA-405
Periods / Week : 04
Periods / Semester : 60

CO No	Topic	Course Outcomes
CO 1	AA-405.1	State the need of building estimates.
CO 2	AA-405.2,3 &4	Explain various types of building estimates.
CO 3	AA-405.5	Calculate the quantities of materials required for various items of works and their costs.
CO 4	AA-405.3 ,4&6	Calculate the building cost.

Course Title: QUANTITY SURVEY		
Course Objectives	(i)	To understand the need of estimating building cost.
	(ii)	To know the procedure of calculating the building cost.
	(iii)	To calculate the quantities of materials required for construction of a building.
Course Outcomes	CO1	State the need of building estimates.
	CO2	Explain various types of building estimates.
	CO3	Calculate the quantities of materials required for various items of works and their costs.
	CO4	Calculate the building cost.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	No of Part-A short answer questions	No of Part-B essay questions	No of Part-C 10 marks questions
1.	Introduction to Estimation	01	-	-	-	01
2	Measurement of Material & Works	04	06	2		
3	Preliminary Estimates	10	14	2	1	
4	Detailed and abstract Estimates	25	30	2	3	
5	Quantities of materials for items of works.	10	06	2	-	
6	Analysis of rates	10	14	2	1	
	From above all topics		10			
	Total:	**60**	**80**	**10**	**5**	**01**

LEARNING OUTCOMES.

Upon the completion of the Course the student will be able to

1.0 Introduction to Estimation

1.1 State different types of estimates Detailed and Approximate estimates – use, importance and its procedure to workout cost of given project.

2.0 Measurement of Material & Works

2.1 Know the measurement units for various items of works

2.2 know Different methods of taking out quantities

3.0 Preliminary Estimates

3.1 Know the different types of estimates

3.2 Calculate the cost of building using preliminary estimates

4.0 Detailed and Abstract Estimates.

4.1 Calculate detailed quantities for various items of works from given set of drawings.

4.2 Work-out quantities of materials for various items of works from given set of drawings.

4.3 Prepare abstract estimate.

5**.0 Quantities of materials for items of works**

5.1 Calculate of quantities of materials required for each item of work and for total building.

6.0 Analysis of rates.

6.1 Know the general terms, lead and lift, Standard Data Book, Standard schedule of rates.

6.2 Work-out cost of materials at site from lead statement and prepare unit rates of various items from standard given data.

COURSE CONTENTS:

1.0 **Introduction to Estimation**

Different types of estimates -Detailed and Approximate estimates – use, importance and its procedure to workout cost of given project.

2.0 Measurement of Materials and works

Units of measurements for various items of construction works Rules for measurement Different methods of taking out quantities – Centre line method, long wall and short wall method.

3.0 Preliminary estimates

Preliminary or Approximate estimate – Plinth area estimate – cubic rate estimate – Unit rate estimate. Problems in preliminary estimate

4.0 Detailed and Abstract estimates

Detailed estimate – definition – stages of preparation – details of measurement and calculation of quantities and Abstract of estimate.

a) Single roomed building (Load bearing type structure)

b) Two roomed building with number of rooms (load bearing type structure)

c) single storied building with number of rooms (load bearing type structure)

d) Single storied residential building (Framed structure types)

e) R.C.C. open Wall stairs.

5.0 Quantities of materials for items of works

Calculation of quantities of materials required for each item of work and for total building.

6.0 Analysis of rates

Cost of materials at site.

Cost of labour – Schedule of rates

Lead and lift – lead statement

Preparation of unit rates for finished items of works with

Given particulars of materials and labour cost.

Reference Books:

1. B.N. Dutta - Estimating and Costing.
2. Mahajan -Estimating and Costing.

Syllabus to be covered for Unit Test-I & Unit Test-II of AA-405 Quantity Survey (C-20)

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 4.2
Unit Test – II	From 4.3 to 6.2

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction to Estimation	**1**	**-**		**1**						
2	Measurement of Material & Works	**4**	**6**		**4**				**6**		
3	Preliminary Estimates	**10**	**14**		**2**	**2**	**6**		**4**		**10**
4	Detailed and abstract Estimates	**25**	**30**		**4**	**2**	**19**		**5**		**25**
5	Quantities of materials for items of works.	**10**	**6**		**2**	**2**	**6**		**1**		**5**
6	Analysis of rates	**10**	**14**		**2**	**2**	**6**		**4**		**10**
From above all topics			**10**								**10**
Total		**60**	**80**								

R-remember U-Understanding Ap-Application An-Analyzing

ARCHITECTURAL DESIGN – II

Course Title : Architectural Design - II
Course Code : AA-406
Periods / Week : 06
Periods /Semester : 90

CO No	Topic	Course Outcomes
C01	AA-406.1,2,3,4	Explain the Importance of design concepts
C02	AA-406.1,2,3,4	Analyse given existing project through case study.
C03	AA-406.1,2,3,4	Explain theFlowchart, schematic plans, , aesthetics, design concepts, planning features for Educational, health and recreational buildings
C04	AA-406.1,2,3,4	Explain the orientation, circulation spaces and cross ventilation forEducational, health and recreational buildings
C05	AA-406.1,2,3,4	Explain byelaws for Educational, health and recreational buildings
C06	AA-406.1,2,3,4	Design and draw plans, elevations, sections, site plan for Educational, health and recreational buildings

Course title: ARCHITECTURAL DESIGN - II		
Course Objectives	i)To understand Fundamental concepts on Site planning, flowchart, schematic plans, , aesthetics, design concepts, planning features of various structures	
	ii) To Know Minimum Standards for Habitable rooms, orientation, cross ventilation aspects, horizontal circulation, vertical circulation spaces for various structures addressing barrier free aspects.	
	iii) To do case study and analyse the existing project relevant to the design topic	
	iv) To design and draw the complete portfolio of the given design problems	
Course Outcomes	**C01**	Explain the Importance of design concepts
	C02	Analyse given existing project through case study.
	C03	Explain the Flowchart, schematic plans, , aesthetics, design concepts, planning features for Educational, health and recreational buildings
	C04	Explain the orientation, circulation spaces and cross ventilation for Educational, health and recreational buildings
	C05	Explain byelaws for Educational, health and recreational buildings
	C06	Design and draw plans, elevations, sections, site plan for Educational, health and recreational buildings

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weight age of Marks		No of short ans. Questions	No of essay ans. questions
			Part-A	Part-B		
1.	**Design and Planning techniques**	9	5	-	1	-
2.	**Educational Buildings** i) Primary School (or) ii) High School	27	5	40	1	1
3.	**Health Buildings** i) Primary health centre(or) ii) Doctor's Clinic	27	5		1	
4	**Recreational Buildings** i) Community Hall (or) ii) Neighbourhood recreation club	27	5		1	
	Total	**90**	**60**		**4**	**1**

Note for End examination:

1. Duration of examination is for 9 hours (divided into three sessions)
2. No choice in Part A and B
3. Part-A: Answer all the **Four** questions and each carry **Five** marks
4. Part-A answers and Tracing of the Part-B Plan are to be submitted and collected at the end of
First session and second session respectively which will be returned at the end of the exam to be tagged all together.

5.Part B: Question no:5 carries 40 marks from Major topic no:2 or 3 or 4.

LEARNING OUTCOMES:

Upon completion of the course the student should be able to

1.0 Design and planning techniques

1.1 Explain the Design concepts, flow chart, schematic plans.

1.2 Explain Principles of aesthetics, planning techniques

1.3 Explain orientation, cross ventilation, circulation spaces, functional spaces and standards.

1.4 Explain CPWD guidelines and space standards for built environment as per "Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act 1996.

2.0Educational Buildings

1) Primary School (or) 2) High School

2.1 Explain functional requirements and design factors for the Educational Buildings.

2.2 Explain the schematic line drawings.

2.3 Explain detailed working drawings for floor plans, sectional elevations and External elevations and site plan and Perspective view
2.4 Explain Interior layout Plan of Educational Buildings.
2.5 Design and draft to make complete portfolios for Primary School (or) High School

3.0 Health Buildings

1) Primary health centre (or)
2) Doctor's Clinic

3.1 Explain functional requirements and design factors for the Health Buildings.
3.2 Explain the schematic line drawings.
3.3 Explain detailed working drawings for floor plans, sectional elevations and External elevations and site plan and Perspective view
3.4 Explain Interior layout Plan of Health Buildings.
3.5 Design and draft to make complete portfolios for Primary health centre (or) Doctor's Clinic

4.0 Recreational Buildings

1)Community Hall (or)
2)Neighbourhood recreation club

4.1 Explain functional requirements and design factors for the Recreational Buildings.
4.2 Explain the schematic line drawings.
4.3 Explain detailed working drawings for floor plans, sectional elevations and External elevations and site plan and Perspective view
4.4 Explain Interior layout Plan of Recreational Buildings.
4.5 Design and draft to make complete portfolios for Community Hall (or) Neighbourhood recreation club

Note for Case studies

1. The batch of students have to seek written permission /recommendation from Course teacher, HoD and Principal of the institution on a letterhead addressing the concerned project authorities.
2. Total strength of the class to be divided into batches not less than 3 and not more than 7
3. The case studies selected for the project can be one or two.
4. The batches to be guided by the Course teacher in the method of studying the Project so that each batch of students have to be entrusted one of the following tasks of study: - (i) study the site, (ii) plan of the building, (iii) elevations of the building (iv) interiors of all functional areas of the building provided for such case.
5. A comprehensive report of the case study entrusted by each batch is to be prepared and presented in form of sketches, drawings, photographs and write-ups.
6. For said case-study maximum 10 marks to be allotted out of internal marks of 40.
7. The risk factors to be taken care by the students themselves, the institution is not responsible for any untoward incidents, damages thereafter.
8. Before seeking the permission for case study the students must have to submit the duly filled indemnity bond.

COURSE CONTENT: -

1.0 Design and Planning Techniques

Design concepts,flowchart, schematic plans, Principles of aesthetics, planning techniques-orientation, cross-ventilation, circulation spaces, functional spaces and

standards.

2.0 Educational Buildings

1)Primary School (or) 2)High School

3.0 Health Buildings

1) Primary health Centre (or) 2) Doctor's Clinic

4.0 Recreational Buildings

1) Community Hall (or) Neighbourhood recreation club

Note for drawings: -: - Each topic should contain the following exercises.

I. Flow Chart.
II. Schematic line drawing.
III. Floor plans, sectional elevations and External elevations, Interior layout plan and site plan and Perspective view.

REFERENCE BOOKS: -

1. National Building Code
2. Time saver standard - Building type and design data.
3. V.N.R. Design.
4. Neufert's, Architects data.
5. Shaw/Kale and Patki- Building drawing.
6. Pratap Rao. M-Principles and Practice of Interior Design
7. Robert W Gill- Rendering with Pen and Ink
8. ISI,National Building Code
9. Municipal bye-laws of Andhra Pradesh.

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated		Period wise distribution of weightage				Mark wise distribution of weightage			
					R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1.	**Design principles and essentials:-**	9	**5**			**3**	**3**			**5**		
2.	**Design Problem-1** Educational Buildings iii) Primary School (or) iv) High School	27	**5**	**40**	**3**	**6**	**12**	**6**		**5**		
3.	**Design Problem-2** Health Buildings iii) Primary health centre iv) Doctor's Clinic	27	**5**		**3**	**6**	**12**	**6**		**5**	**40**	
4	**Design Problem-3** Recreational Buildings- iii) Community Hall iv) Neighborhood recreation club	27	**5**		**3**	**6**	**12**	**6**		**5**		
	Total	**90**										

R-remember U-Understanding Ap-Application An-Analysing

BUILDING CONSTRUCTION DRAWING-II (C20)

Course Title : Building Construction Drawing-II
Course Code : AA-407
Periods / Week : 03
Periods / Semester : 45

CO No	Topics	Course Outcomes
C01	AA-407.1	Explain the techniques of laying roofs and Floors
C02	AA-407.2	Explain the techniques of laying Floorings
C03	AA-407.3	Explain the method of construction of Arches & Lintels
C04	AA-407.4	Explain method of doing Timber joints, and method of doing timber work like doors and windows.

Course title: Building Construction Drawing-II		
Course Objective	**i)**	To understand the knowledge of Roofs& Floors
	ii)	To understand the concepts of Floorings
	iii)	To understand designing and construction of Arches& Lintels
	iv)	To understand Timber joints and designing and drawing of Doors, Windows.
Course Outcome	**C01**	Explain the techniques of laying roofs and Floors
	C02	Explain the techniques of laying Floorings
	C03	Explain the method of construction of Arches & Lintels
	C04	Explain method of doing Timber joints, and method of doing timber work like doors and windows.

TIME SCHEDULE

	Major Topics	**No. of Periods**	**Weightage of Marks**	**short questions**	**essay questions**
1.	Roofs& Floors	9	15	1	1
2.	Floorings	9	15	1	1
3.	Arches & Lintels	12	25	1	2
4.	Doors, Windows & Timber joints	15	25	1	2
	TOTAL	**45**	**80**	**4**	**6**

Note for Examination:

Duration of exam is for **3 hours** (one session only)
Part-A: Answer all the **Four**questions and each question carry **Five**marks.
Part-B: Answer any **Four** questions out of **Six** and each question carries **Ten** Marks.

LEARNING OUTCOMES:

Upon the completion of the subject the student shall be able to

1.0Roofs& Floors

1.1 Explain and Draw types of roofs

a) Pitched roofs: i) Single roofs ii) purlin roofs iii) Trussed roofs

b) Flat roofs: i) R.CC roof, ii) Madras terrace roof

2.0Floorings

2.1 Explain the Requirements of good flooring

2.2 Explain types of Flooring materials

2.3Explain and Draw Types of flooring: i) Cement concrete flooring, ii) Terrazzo flooring, iii) Mosaic flooring, iv) Tiled flooring, v) Marble flooring, vi) Timber flooring

3.0 Arches & Lintels

3.1 Explain and Draw types of Arches- According to Number of centres and shapes

3.2Explain and Draw various types of lintels-RCC Lintel, reinforced Brick lintel, Stone lintels and wooden Lintels.

3..3 Explain and draw sunshades, canopy, and sun breakers

4.0 Doors, Windows & Timber joints

4.1 Explainand Draw Timber Joints: i) Lengthening joints, ii) Widening joints, iii) Oblique shoulder Joints

4.2Explain Location of doors

4.3Draw and Label the parts of door: i) Panelled Door, ii) Glazed and flush door

4.4Draw and Label the parts of Casement Window,

4.5Draw and Label the parts of Ventilators

4.6 Explain Fastenings and fittings of doors and windows

4.7 Explain UPVC doors

COURSE CONTENTS:

1.0Roofs& Floors

1.1 Types of roofs

a) Pitched roofs: i) Single roofs ii) purlin roofs iii) Trussed roofs

b) Flat roofs: i) R.CC roof, ii) Madras terrace roof

2.0Floorings

2.1 Requirements of good flooring

2.2 Types of Flooring materials

2.3 Types of flooring: i) Cement concrete flooring, ii) Terrazzo flooring, iii) Mosaic flooring, iv) Tiled flooring, v) Marble flooring, vi) Timber flooring

3.0 Arches & Lintels

3.1 Types of Arches- According to Number of centres and shapes

3.2Types of lintels-RCC Lintel, reinforced Brick lintel, Stone lintels and wooden Lintels.

3.3 Sunshades, canopy, and sun breakers

4.0 Doors, Windows & Timber joints

4.1 Timber Joints: i) Lengthening joints, ii) Widening joints, iii) Oblique shoulder Joints

4.2Location of doors

4.3Panelled Door, Glazed and flush door

4.4Casement Window,

4.5Ventilators

4.6 Fastenings and fittings of doors and windows

4.7 UPVC doors

Exercises:

1. Draw different types of roofs. (Pitched and Flat roofs)
2. Draw the elevation of king post truss
3. Draw the sectional elevation of a RCC roof slab with full reinforcement details
4. Draw the plan of a marble or granite or tiled or cement concrete or timber flooring with pattern and a section showing ground level to finished floor level with sand filling PCC bed and floor finish.
5. Draw the elevation of different tytp3es of arches according to their number- One centered and two centered and label its parts
6. Draw the elevation of different types of arches according to shape – Segmental and semi-circular arches and label its parts
7. Draw a RCC lintel with sunshade projecting over a window showing the reinforcement details
8. Draw the different types of Lengthening joints Widening Joints
9. Draw the Oblique shoulder joints used in doors and windows
10. Draw the plan and elevation of paneled door and label its parts
11. Draw the plan and elevation of glazed casement window and label its parts

Reference Books:

1) MC Kay-Building construction Volumes I, II, III and IV
2) Berry -Building Construction Volumes I, II, III and IV
3) S.C. Rangwala- Building Construction
4) N.R.R. Moorthy - Building Construction
5) S.P.Bindra&S.P.Arora-Building Construction .
6) ISI,NBC

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1.	Roofs& Floors	9	15		**3**	**6**		**3**	**3**	**6**	**3**
2.	Floorings	9	15		**3**	**6**		**3**	**3**	**6**	**3**
3.	Arches & Lintels	12	25	**3**	**3**	**6**		**3**	**6**	**13**	**3**
4.	Doors ,Windows & Timber joints	15	25	**3**	**3**	**9**		**3**	**6**	**13**	**3**
	Total	**45**	**80**								

R-remember U-Understanding Ap-Application An-Analysing

COMMUNICATION SKILLS

Course Code	Course Title	No. of Periods/Week	Total No. of Periods	Marks for FA	Marks for SA
AA-408	Communication Skills	3	45	40	60

S.	Unit Title	No of	COs Mapped
1	**Listening Skills**	6	CO1
2	**Introducing Oneself**	3	CO1, CO2, CO3
3	**Short Presentation (JAM)**	6	CO1, CO2, CO3
4	**Group Discussion**	6	CO1, CO2, CO3
5	**Preparing Resume with Cover**	3	CO3
6	**Interview Skills**	9	CO1, CO2, CO3
7	**Presentation Skills**	9	CO1, CO2
8	**Work place Etiquette**	3	CO1, CO2
Total Periods		**45**	

Course Objectives	To comprehend the features of communication needed for professional success and display the use of these competently
	To present ideas, opinions in group discussions and presentations on topics of general and technical interest
	To prepare for job selection processes

CO No.	Course Outcomes
CO1	Interacts in academic and social situations by comprehending what is listened to when others speak.
CO2	Demonstrates effective English communication skills while presenting ideas, opinions in group discussions and presentations on topics of general and technical interest.
CO3	Exhibits workplace etiquette relevant in classroom situations for easy adaptation in professional setting in the future.

***Rubric Descriptors 'Good/ Competent / Fair /Poor' for Communication**

LEVEL OF COMPETENCE	Fluency and Coherence	Lexical Resource (Vocabulary)	Grammatical Range and Accuracy
GOOD (9-10*)	Speaks at length without noticeable effort or loss of coherence. May demonstrate language-related hesitation at times, or some repetition and/or self-correction.	Uses vocabulary resources flexibly during discussion. Uses paraphrase effectively.	Uses a range of complex structures with some flexibility.

	Uses a range of connectives and discourse markers with some flexibility. **Articulates and adapts to near naturalization.**	Uses some less common vocabulary and shows some awareness of style and collocation	Mostly produces error-free sentences.
COMPETENT (6-8)	Is willing to speak at length, though may lose coherence at times due to occasional repetition, self-correction or hesitation.	Has enough vocabulary to discuss topics and make meaning clear in spite of inappropriacies.	Uses a mix of simple and complex structures, but with limited flexibility.
	Uses a range of connectives and discourse markers but not always appropriately.	Generally paraphrases successfully	May make mistakes with complex structures though these rarely cause comprehension problems.
FAIR (3-5)	Tries to maintain a flow of speech but t uses repetition, self correction and/or slow speech to keep going.	Manages to talk about familiar and unfamiliar topics but uses vocabulary with limited flexibility.	Produces only basic sentence forms, however, errors persist.
	Produces simple speech fluently, but more complex communication causes fluency problems.	Attempts to use paraphrase but with mixed success.	Uses a limited range of more complex structures, but these usually contain errors and may cause some comprehension problems
POOR (0 *-2)	Speaks with long pauses. Pauses lengthy before most words. **Merely imitates**	Uses simple vocabulary to convey personal information	Attempts basic sentence forms but with limited success, or relies on apparently memorized utterances
	Has limited ability to link simple sentences	Has insufficient vocabulary for less familiar topics	Makes numerous errors except in memorized expressions
	Gives only simple responses and is frequently unable to convey basic message	Only produces isolated words or memorized utterances	Struggles to produce basic sentence forms

***10 marks to be awarded only if competence level shows flawless expertise in English.**
***0 marks to be awarded when student shows incoherence and gives irrelevant responses.**

Blue Print for evaluation based on Course Outcomes for SA of each student:
Note: Marks are awarded for each student as per the Rubric descriptors.

S. No.	Questions based on Course Outcomes	Periods Allocated for practical work	Marks Wise Distribution of Weightage	Marks allotment for each Student in the Rubric*				Mapping of COs
				Poor 0-2	Fair 3-5	Competent 6-8	Good 9-10	
1	Describe the given object in a minute	6	10					CO 2
2	Exchange ideas/ views in a group discussion on _____ issue (academic, technical or social)	6	10					CO1, CO 2
3	Present your ideas /opinions on the given issue/ topic (individual to an audience)	9	10					CO1, CO2, CO 3
4	Role play an imaginary work-place situation	6	10					CO1, CO2, CO 3
5	Individual interaction with the Examiner duly submitting Resume (Facing the Interview) – Introducing oneself and answering questions	12	10					CO1, CO2, CO 3
6	*Listen to and comprehend any audio communication/ content	6	10					CO1, CO2, CO 3
TOTAL		**45**	**60**					

***Listen to and comprehend the given audio content**: Giving the Students time to read the questions (Fill in the Blanks, Select from Alternatives, True or False, Table fill, etc.) in chunks before listening to audio inputs also played in chunks.

Blue Print for evaluation based on Course Outcomes for Formative Assessment:
Note: Every Question based on CO has to be given marks for the following parameters in the rubric.

- Fluency and Coherence
- Lexical Resource
- Grammatical Range and Accuracy

S. No.	Questions based on Course Outcomes	Periods Allocated for practical work	Marks Wise Distribution of Weightage	Marks allotment for each Student in the Rubric*				Mapping of COs
				Poor 0-2	Fair 3-5	Competent 6-8	Good 9-10	
Formative Assessment – 1								
1	Describe the given object in a minute	3	10					CO 2
2	Exchange ideas/ views in a group discussion on _____ issue (academic, technical or social)	6	10					CO1, CO 2
3	Present your ideas /opinions on the given issue/ topic (individual to an audience)	6	10					CO1, CO2, CO 3
4	*Listen to and comprehend any audio communication/ content	3	10					CO1, CO2, CO 3
Total		**18**	**40**					
Formative Assessment -2								
1	Present your ideas /opinions on the given issue/ topic (individual to an audience)	3	10					
2	Role play an imaginary work-place situation	6	10					CO1, CO2, CO 3

3	Individual interaction with the Examiner duly submitting Resume (Facing the Interview) – Introducing oneself and answering questions	15	10					CO1, CO2, CO 3
4	*Listen to and comprehend any audio communication/ content	3	10					CO1, CO2, CO 3
TOTAL		**27**	**40**					

Learning Outcomes

1. **Listening Skills:**
   - 1.1 Listen to audio content (dialogues, interactions, speeches, short presentations) and answer questions based on them
   - 1.2 Infer meanings of words / phrases / sentences / after listening to audio content as mentioned above
2. **Introducing Oneself:**
   - 2.1 Prepare a grid different aspects for presentation about a person / oneself
   - 2.2 Present a 1 or 2 minute introduction of oneself for an audience
3. **Short Presentation:**
   - 3.1 Define an object
   - 3.2 Describe an object, phenomenon, event, people
   - 3.3 Speak on a topic randomly chosen
4. **Group Discussion:**
   - 4.1 Practice Group Discussion. Techniques
   - 4.2 Participate in group discussions
5. **Resume Writing and Cover Letter:**
   - 5.1 Prepare resumes of different sorts – one's own and others.
   - 5.2 Write an effective cover letter that goes with a resume
6. **Interview Skills:**
   - 6.1 Prepare a good Curriculum Vitae
   - 6.2 Exhibit acceptable (Greeting, Thanking, Answering questions with confidence)
7. **Presentation Skills:**
   - 7.1 Prepare Posters, Charts, PPT's on issue of general and technical interest
   - 7.2 Present one's ideas before an audience with confidence using audio visual aids and answer questions that are raised.
8. **Workplace Etiquette:**
   - 8.1 Show positive attitude & adaptability / appropriate body language to suit the work place
   - 8.2 Display basic of etiquette like politeness, good manners.

COMPUTER AIDED DESIGN AND DRAUGHTING LAB-II (C-20)

Course Title : Computer Aided Design and Draughting Lab-II
Course Code : AA - 409
Periods / Week : 06
Periods /Semester : 90

CO No	Topic	Course Outcomes
CO 1	AA-409.1 to 3	Explain the Importance, uses and applications of 3D
CO 2	AA-409.1	Practice 3D modeling, view ports, model and paper space and Convert 2D to 3D
CO 3	AA-409.2	Draw 3Dsolids
CO 4	AA-409.3	Draw 3D models for any one exercised portfolios of Architectural Design-II

Course Objectives	i)To understand the 3D commands by using Sketchup software. ii) To understand how to convert 2D to 3D and 3D commands. iii) To draw 2D objects to 3D by wireframe, surfaces and different co-ordinate system, objects using elevation command, Perspective view ,3D solids and Draw 3D. Models	
Course Outcomes	**C01**	Explain the Importance, uses and applications of 3D
	C02	Practice 3D modeling, view ports, model and paper space and Convert 2D to 3D
	C03	Draw 3Dsolids
	C04	Draw 3D models for any one exercised portfolios of Architectural Design-II

TIME SCHEDULE

Sl. No	Major Topics	No. of periods
1	3D - Modelling, View Ports, Model space and paper space	12
2	Solids	12
3	3D Exercise	66
	Total	**90**

LEARNING OUTCOMES
Upon the completion of the subject the student shall be able to

1.0 3D - Modelling, View Ports, Model space and Paper space

1.1 3D modeling

1.1.1Draw 2D objects to 3D
1.1.2 Develop Wire frame models.
1.1.3 Practice Developing Surfaces
1.1.4 Practice with Different co-ordinate systems
1.1.5 Practice with UCS.

1.2 View Ports

1.2.1 Practice on View ports,
1.2.2 Practice on Alignment of views,
1.2.3 Practice elevation commands.

1.3 Model space and paper space

1.3.1 Practice Application techniques for creating Model space, Paper Space
1.3.2 Draw Perspective view and Triple view.

2.0 Solids.

2.1. Practice 3D Solid Primitives, Boolean operation, cutting and editing of different types of solidsand combination of solids such as cube, cuboids, cylinder, cone, polygonal solids.

3.0 3D Exercise

3.1 Draw 3D models for any one exercised portfolios of Architectural Design-II

COURSE CONTENT

1.0 3D - Modelling, View Ports, Model space and Paper space

a. 3D Modelling:

Converting 2D objects to 3D, wire frame models. Surfaces, Different co-ordinate systems, working with UCS.

b. View Ports

View ports, Alignment of views, treating objects using elevation command.

c. Model space and paper space.

Model space, Paper Space, Perspective view, Triple view.

2.0 Solids.

2.1. 3D Solid Primitives, Boolean operation, cutting and editing of different types of solids and combination of solids such as cube, cuboids, cylinder, cone, polygonal solids.

3.03D Exercise

3.1 Draw 3D models for any one exercised portfolios of Architectural Design-II

Note: The following exercises are to be submitted by the students in hard copies in the form of a portfolio for Internal evaluation.

1) Convert 2D objects to 3D by application of
   i. Wire frame models.
   ii. Surfaces
   iii. Different co-ordinate systems
   iv. Working with UCS.

2) Apply Model space and Paper space and develop Perspective and Triple views.

3) Create 3D Solid by Application of Primitives and Boolean operation

Note for maintaining CAD Lab-II

1. A separate laboratory should be established for CAD.
2. The lab should be equipped with sufficient computers with licensed latest CAD software along with required space, furniture, Interior and infrastructure.
3. The lab should be maintained well as per the standards and required funds to be provided forconducting regular class works, exams, stationery, repairs etc.,

REFERENCES BOOKS:

Any standard books of latest software on 3D and Software Manuals relevant for the Subject.

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	3D - Modelling, View Ports, Model space and paper space	**12**	**10**	**-**	**2**	**10**	**-**	**-**	**2**	**8**	**-**
2	Solids	**12**	**10**	**-**	**3**	**9**	**-**	**-**	**2**	**8**	**-**
3	3D Exercises	**66**	**20**	**-**	**10**	**56**	**-**	**-**	**5**	**15**	**-**
Internal Marks 40 Marks			**40**								
End Exam for 60 Marks								**10**	**20**	**30**	

R-remember U-Understanding Ap-Application An-Analyzing

MODEL MAKING LABORATORY(C-20)

Course Title : Model Making Lab
Course Code : AA-410
Periods / Week : 03
Periods /Semester : 45

CO No	Topic	Course Outcomes
CO 1	AA-410.1&2	Identify suitable tools and materials for different types of models.
CO 2	AA-410.3,4 & 5	Apply different techniques to prepare models of realistic, artistic merit and crafts Man-ship.

Course Objectives	i) To know the importance of model making in architectural and construction field ii) To know various types of tools, materials and geometrical planes and solids iii) To apply different techniques to prepare architectural models	
Course Outcomes	C01	Identify suitable tools and materials for different types of models.
	C02	Apply different techniques to prepare models of realistic, artistic merit and craftsmanship.

TIME-SCHEDULE

Sl. No	Major Topics	No. of periods
1.	Introduction	03
2.	Tools and Materials	03
3.	Geometrical Planes and Solids	06
4.	Construction Models	09
5.	Architectural Models	24
	Total:	**45**

LEARNING OUTCOMES:
Upon completion the course the student should be able to

1.0 Introduction

1.1 Know the importance of models in the field of architecture.

2.0 Tools and Materials

2.1 Identify suitable tools and materials for different types of models.
2.2 Prepare models of realistic, artistic merit and craftsmanship.

3.0 Geometrical Planes and Solids

3.1Know the various geometrical planes and solids

3.2 Prepare models of geometrical planes and solids

4.0 **Construction Models**

4.1 Prepare models of bricks, brickbats, English and Flemish bonds in walls.

5.0 **Architectural Models**

5.1 Prepare models of small buildings and structures.

Course Content

1.0 Introduction

Importance of models in the field of architecture.

2.0 Tools and Materials

suitable tools and materials for different types of models-Preparation of models of realistic, artistic merit and craftsmanship.

3.0 Geometrical Planes and Solids

Preparation of models of various geometrical planes -square, rectangle, polygons, circle, triangle, parallelogram etc.

Preparation of models of solids-cube, cuboid, prism, cone, cylinder, pyramid.

4.0Construction Models

Preparation of models of bricks, brickbats, English and Flemish bonds in walls.

5.0Architectural Models

Preparation of models of small buildings and structures.

List of Exercises:

1. Prepare geometrical planes out of mount board, square, Rectangle, Regular polygon, Circle, Trapezium, Triangle, Parallelogram.
2. Prepare geometrical solids out of mount board, cube, cuboid, prism, cone, cylinder, pyramid.
3. Prepare different types of brickbats out of mount board or chamanlal card.
4. Prepare an arranged layout of English Bond in brick wall, 1,3,5--- and 2,4,6--- courses Scale 1:10.
5. Prepare an arranged layout of Flemish bond in brick wall 1,3,5, --- and 2,4,6 --- courses, Scale 1:10.
6. Prepare a rat trap bond with mount board – Scale 1:10
7. Models with suitable materials and the scale of 1:25 any four
   a) Ice cream parlour b) Exhibition Stalls
   c) Watchman's cabin d) Compound wall
   e) Garden pavilion f) Telephone Booth.
8. Models with suitable materials and suitable scale
   a) Single bed roomed residence b) Double bed roomed residence
   c) A G+1 residential building.
9. Prepare trees out of Sponge, wire and suitable materials, which are available in the market.
10. Prepare models of cars, human figures, lampposts, railings, lawns, fountain, pools, Sculpture, furniture. Etc to be used together with architectural models.

Note: Materials - Mount board, Ivory sheet, Thermacoal, Card-boards and any suitable material.

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	03	**-**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**
2	Tools and Materials	03		**-**	**3**		**-**	**-**			
3	Geometrical Planes and Solids	06	**10**	**-**	**2**	**4**	**-**	**-**		**10**	
4	Construction Models	09	**10**	**-**	**2**	**7**	**-**	**-**		**10**	
5	Architectural Models	24	**20**		**4**	**20**				**20**	
Internal Marks 40 Marks			40								
End Exam for 60 Marks								**10**	**20**	**30**	

R-remember
U-Understanding
Ap-Application
An-Analysing

V SEM

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)
SCHEME OF INSTRUCTIONS AND EXAMINATIONS

AA-501 PRACTICAL TRAINING
V SEMESTER (C-20)

Course Code	Course Title	Duration	Marks for Formative Assessment	Marks for Summative Assessment
A-501	Practical Training	6 months	240	60

CO No	Topic	Course Outcomes
CO1	AA-501.1, 2	Know Organisational setup and maintenance of an Architect`s office.
CO2	AA-501.3, 4 & 8	Learn preparation of drawings for presentation, approvals and execution.
CO3	AA-501.6	Learn preparation of building estimates and structural drawings.
CO4	AA-501.3, 4 & 5	Supervise the onsite execution of projects.
CO5	AA-501.7	Develop skills in interaction with various people concerned.

Course title: PRACTICAL TRAINING		
Course Objectives	(i)	To understand the requirements and functioning of an Architect`s office.
	(ii)	To learn designing of projects, preparation of required drawings and on-site execution.
	(iii)	To observe and learn Architect-client-contractor relationships and work culture in the field of Architecture
Course Outcomes	CO1	Know Organisational setup and maintenance of an Architect`s office.
	CO2	Learn preparation of drawings for presentation, approvals and execution.
	CO3	Learn preparation of building estimates and structural drawings.
	CO4	Supervise the onsite execution of projects.
	CO5	Develop skills in interaction with various people concerned.

TIME SCHEDULE

<table>
<tr><th>S.NO</th><th>Name of the course</th><th>Duration</th><th colspan="2">Items</th><th>Max Marks</th></tr>
<tr><td rowspan="5">1</td><td rowspan="5">Practical Training in an Architectural consultancy /Firm</td><td rowspan="5">6 Months</td><td colspan="2">1.First Assessment

(As per Rubric Assessment Format to be assessed by 1.The faculty concerned and
2. Training Mentor of the Architectural consultancy/Firm at the end of 3rd month)</td><td>120</td></tr>
<tr><td colspan="2">2. Second Assessment

(As per Rubric Assessment Format to be assessed by 1.The faculty concerned and
2. Training Mentor of the Architectural consultancy/Firm at the end of 6th month)</td><td>120</td></tr>
<tr><td rowspan="3">3.Final assessment
To be assessed by
(1) The faculty member concerned, (2) HoD concerned and
(3) An external examiner</td><td>3. Log Book</td><td>20</td></tr>
<tr><td>4. Portfolio</td><td>20</td></tr>
<tr><td>5. Seminar</td><td>20</td></tr>
<tr><td colspan="5">TOTAL MARKS</td><td>300</td></tr>
</table>

LEARNING OUTCOMES

On completion of Practical Training in an architect's office or in relevant organizations, the student will be able to

1.0 Know the organizational set up of firm.

1.1 Know the Staff Pattern (Chief Consultant to Office Boy and Field Staff).

1.2 Know the function of each department / section.

1.3 Know the intra relationship among various departments / sections.

2.0 Know the various drawing instruments, machines and office furniture required in an Architect's office.

2.1 Know the different drafting tools for manual drafting and CADD.

2.2 Know the type of furniture used– Chief Consultant's room, Architects room drafting & designing studio along with printer room, lunch room, conference room, store room etc.,

3.0 Understand various stages involved in designing and execution of projects.

3.1Stagewise drawings preparation

3.2 Stages of execution of projects

4.0 Know the important drawings required in each type of project

4.1 Schematic and Municipal (Submission drawing for local authority approval permitting for construction).

4.2 Presentation- Types of Drawings and method/media.
4.3 Working Drawings-Types of Drawings for various items of works in view of execution of works at site.
4.4 Views- Types of views, presentation
4.5 Models- Types, Materials, completion.

5.0 Know the execution of work in the site

5.1 Site Survey (Measuring, levelling, Plotting etc.,)
5.2 Marking for Proposed Building (to be constructed on site)
5.3 Excavation & foundation- Size of pits/Trenches, Types of foundation.
5.4 Super Structure-Brick Masonry, Plastering, Doors, Windows, ventilators etc.,
5.5 Flooring-Selection, preparation, laying, completion.
5.6 Electrical & Plumbing- Selection, type, terminology, preparation, laying, fixing, completion for interior and exterior spaces.
5.7 Finishing – painting interior & exterior doors, windows, ceiling, walls etc.,
5.8 Supervisors- Supervision for various works in site, from marking to completion.
5.9 Raw Materials & Material- Sources, Market Products, quantities and qualities tentative/actual costs, application/use.

6.0 Know the type of civil works undertaken in office

6.1 Estimation for loan approval and for construction.
6.2 Structural drawings- Sub structure and Super structure.

7.0 Know the interaction between the architect and different people

7.1 Architect – Client (Instructions by Architect to staff in view of responding to clients.)
7.2 Architect – Contractors/ Site Staff
7.3 Architect – Office Staff
7.4 Among office staff

8.0 Drafting

8.1 Get expertise in Drafting different types of drawings- Manual & Auto Cad.

Course Contents:

1.0 **Know the organizational set up of firm**.

Staff Pattern (Chief Consultant to Office Boy and Field Staff)- function of each department / section- intra relationship among various departments / sections.

2.0 Know the various drawing instruments, machines and office furniture required in an Architect's office.

Different drafting tools for manual drafting and CADD- type of furniture used– Chief Consultant's room, Architects room drafting & designing studio along with printer room, lunch room, conference room, store room etc.,

3.0 Understand various stages involved in designing and execution of projects.

Stage wise drawings preparation-conceptual drawings, presentation and working drawings stages Stages of execution of projects-excavations, foundation, super structure, services Levels

4.0 Know the important drawings required in each type of project

Schematic and Municipal (Submission drawing for local authority approval permitting for construction)-Presentation- Types of Drawings and method/media.
Working Drawings-Types of Drawings for various items of works in view of execution of works at site.
Views- Types of views, presentation
Models- Types, Materials, completion.

5.0 Know the execution of work in the site

Site Survey (Measuring, levelling, Plotting etc.,)
Marking for Proposed Building (to be constructed on site)
Excavation & foundation- Size of pits/Trenches, Types of foundation.
Super Structure-Brick Masonry, Plastering, Doors, Windows, ventilators etc.,
Flooring-Selection, preparation, laying, completion.
Electrical & Plumbing- Selection, type, terminology, preparation, laying, fixing, completion for interior and exterior spaces.
Finishing – painting interior & exterior doors, windows, ceiling, walls etc.,
Supervisors- Supervision for various works in site, from marking to completion.
Raw Materials & Material- Sources, Market Products, quantities and qualities tentative/actual costs, application/use.

6.0 Know the type of civil works undertaken in office

Estimation for loan approval and for construction.
Structural drawings- Sub structure and Super structure.

7.0 Know the interaction between the architect and different people

Architect – Client (Instructions by Architect to staff in view of responding to clients.)
Architect – Contractors/ Site Staff
Architect – Office Staff
Among office staff

8.0 Drafting

Get expertise in Drafting different types of drawings- Manual & Auto Cad.

GUIDELINES FOR INDUSTRIAL TRAINING OF DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP PROGRAMME:

1. Duration of the training: 6 months (24 Weeks).
2. Eligibility: As per SBTET norms
3. The candidate has to undergo training for a complete period of six months only under the guidance of Architect, registered with Council of Architecture, having established a firm
4. The candidate shall put a minimum of 90% attendance during Industrial training.
5. If the student fails to secure 90% attendance during industrial training, the student shall reappear for 6 months industrial training.
6. Formative assessment at industry shall be carried out by the Mentor from the industry, where the student is undergoing training and the in faculty in-charge (Guide) from the concerned section in the institution.
7. The Industrial training shall carry a Weightage of 300 marks and pass mark is 50% in assessments at industry (first and second assessment) and final summative assessment at institution put together i.e. 150 marks out of 300 marks.
8. If the student fails to secure 50% marks in final summative assessment at institution level, the student should reappear for final summative assessment in the subsequent board examination.
9. Final summative assessment at institution level is done by a committee including1. Head of the section (of concerned discipline ONLY), 2.External examiner from an industry and 3. Faculty member who assessed the student during Industrial Training as members

Roles and responsibilities of the faculty members who are assessing the students performance during industrial Training:

1. The faculty member shall guide the students in all aspects regarding training.
2. Shall create awareness regarding safety measures to be followed in the industry during the training period, and shall check it is followed scrupulously.
3. Shall check the logbook of the students during the time of their visit for the assessment.
4. Shall monitor progress at regular intervals and make appropriate suggestions for improvement
5. Shall visit the industry and make first and second assessments as per stipulated schedule.
6. Shall assess the skill sets acquired by the students during their assessment.
7. Shall award the marks for each skill set as per the marks allotted for that skill set during final assessment at institution.
8. Shall voluntarily supplement students learning through appropriate materials like photographs, articles, videos etc.
9. Shall act as co-examiner along with external examiner.
10. Shall act as liaison between the student and mentor.
11. Shall maintain a diary indicating his observation with respect to the progress of students learning in all three domains (Cognitive, Psychomotor and Affective)

Guidelines to the training mentor in the industry:

1) Shall train the students in all the skill sets as far as possible.
2) Shall assess and award the marks in both the assessments along with the faculty member.
3) Shall check and approve the log books of the students.
4) Shall approve the attendance of each student at the end of the training period.
5) Shall report to the guide about student's progress, personality development or any mis behaviour as the case may be.
6) Every Teacher (including HoD if not holding any FAC) shall be assigned a batch of students of 10 to 15 for industrial training irrespective of student's placements for training.

Rubrics for assessment:
Department of Technical Education
Name of the institution
AA-501 :: Practical training assessment Diploma in Architectural Assistantship

PIN: **Name of the student:**

Skill Set Sl.No	***SKILL SET***	**Max Marks Allotted For each parameter**	**Precisely completes the task**	**Completes the task, mistakes are absent, but not Precise**	**Completes the task, Mistakes are a few**	**Makes attempt, Mistakes are many**
1	***Familiarity with Architectural professional terminology, tools and materials***					
	(i) Attendance & Punctuality	*4*	*4*	*3*	*2*	*1*
	(ii) Terminology, Tools and Materials	*6*	*6*	*5*	*3*	*2*

2	***Attitude towards job and application of knowledge***	*5*	*5*	*4*	*3*	*1*
3	***Ability towards the job***					
	(i) Problem solving skills	*4*	*4*	*3*	*2*	*1*
	(ii) Comprehension and Observations	*6*	*6*	*4*	*3*	*1*
4	***Human relations and ability to communicate***					
	(i) Clients	*5*	*5*	*3*	*2*	*1*
	(ii) Contractors	*5*	*5*	*3*	*2*	*1*
5	*Supervising ability*					
	(i) Plan vs Physical construction	*5*	*5*	*3*	*2*	*1*
	(ii) Site permission and amicable construction	*5*	*5*	*3*	*2*	*1*
6	***Creativity and Innovative skills***					
	(i) Creativity in design and planning	*10*	*10*	*8*	*6*	*3*
	(ii) Innovative skills in application of new and adoptive softwares	*5*	*5*	*3*	*2*	*1*
	(iii) Drawing Abilities (a) Drafting, (b) Detailing, (c) Perspectives/Views,	*60*	*60*	*50*	*40*	*20*

*Mistakes are with reference to Technique, Procedure & precautions, while precision refers to technique, procedure, precautions, time & result

(Marks awarded in words:)

Signature of the Training In-charge (Mentor)
Name
Designation

Signature of the faculty in charge (Guide)
Name
Designation

VI SEM

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (D.A.A)
SCHEME OF INSTRUCTIONS AND EXAMINATIONS

Course Code	Name of the Course	Instruction periods/ Per week		Total periods per Semester	Scheme of Examination			Total Marks
		Theory	Practical		Duration Hr	Sessional Marks	End marks	
THEORY								
AA-601	Entrepreneurship and Project Management	04	--	60	03	20	80	100
AA-602	Modern Architecture	04	--	60	03	20	80	100
AA-603	Professional Practice & Building Bye-laws	03	--	45	03	20	80	100
AA-604	Structural Design	06	--	90	03	20	80	100
AA-605	Urban Planning	03	---	45	03	20	80	100
PRACTICALS								
AA-606	Building Services drawing	--	06	90	03	40	60	100
AA-607	Working Drawings practiceLab	--	04	60	03	40	60	100
AA-608	Life Skills	---	03	45	03	40	60	100
AA-609	Construction Practice Lab	--	03	45	03	40	60	100
AA-610	Project Work	--	06	90	---	40	60	100
	Totals	**20**	**22**	**630**	**--**	**300**	**700**	**1000**

ENTREPRENEURSHIP AND PROJECT MANAGEMENT (C20)

Course Title : Entrepreneurship and Project Management
Course Code : AA-601
Periods/week : 04
Periods/semester : 60

CO No	Topic	Course Outcomes
CO1	AA-601.1 & 2	Motivate and Inculcate the entrepreneurial activity in uplifting the economy for self and the Nation.
CO2	AA-601.2, 8 & 10	Establish, run and enlarge an organization by self-applying management and marketing techniques.
CO3	AA-601.6, 7, 11 & 13	Start or work for construction and contracts of buildings in serving by self and the organization
CO4	AA-601.3, 4, 5, 8, 9 & 10	Apply site management techniques in managing Material, Construction, Human, Equipment and Quality
CO5	AA-601.2, 12 & 14	Acquire Employment having the knowledge of the embedded course components.

COURSE OBJECTIVES and COURSE OUTCOMES

Course title: ENTREPRENEURSHIP AND PROJECT MANAGEMENT		
Course Objectives	(i)	To Define the terminology and understand in brief the Entrepreneurship, Project Management, Organizational aspects, Management tools, Tenders, Contracts, Resources and Financial management, Quality Management.
	(ii)	To learn the common building code of India (National building code) (NBC).
	(iii)	To understand and manage the aspects of an Organization in a hierarchy method
	(iv)	To understand various techniques through management tools
	(v)	To learn the tendering process and types of contracts.
	(vi)	To understand the Human resource, Financial, Equipment and Material management techniques, Tall building construction
	(vii)	To know the Quality management systems
	(viii)	To understand the International Standards Organization (ISO) and need for quality raw material to supply
Course Outcomes	CO1	Motivate and Inculcate the entrepreneurial activity in uplifting the economy for self and the Nation.
	CO2	Establish, run and enlarge an organization by self-applying management and marketing techniques.
	CO3	Start or work for construction and contracts of buildings in serving by self and the organization
	CO4	Apply site management techniques in managing Material, Construction, Human, Equipment and Quality
	CO5	Acquire Employment having the knowledge of the embedded course components.

TIME SCHEDULE

Sl.No	Major Topics	No of Periods	Weightage of Marks	No of Part-A short ans. questions	No of Part-B ans. questions	Part-C Essay questions
1.	Introduction	01	-	-	-	01
2	Entrepreneurship	04	03	1	-	
3	Basics of project Management	02	-	-	-	
4	Organizational aspects	06	8	-	1	
5	Management Tools	10	11	1	1	
6	Tenders	04	07	1	1	
7	Contracts	04	07	1		
8	Human resource management	04	03	1	-	
9	Material Management	04	03	1	-	
10	Management of construction plant and Equipment	02	03	1	-	
11	Financial Management	04	03	1	-	
12	Management of Tall Building construction	05	8	-	1	
13	Total quality Management	07	11	1	1	
14	Introduction to ISO 9000	03	03	1	-	
	From above all Topics	-	10	-	-	
	Total	**60**	**80**	**10**	**5**	**01**

LEARNING OUTCOMES:

Upon the completion of the Course the student will be able to

1.0 Introduction

1.1 Know the Definition of Management.
1.2 Know the Need for Scientific Management of Projects.
1.3 State Objectives of construction management
1.4 Explain Scope of Construction management

2 .0 Entrepreneurship

2.1 Explain the Definition, concept.
2.2 Explain the Role, expectation and characteristics of entrepreneur.
2.3 Explain Risks and rewards.

3.0 Basics of Project Management.

3.1 State Management and Infrastructural facilities at field level.
3.2 Know National Building code and sequence of works.

4.0 Organizational aspects.

4.1 Explain organisational structure of an Architect's office
4.2 Explain Preliminary and Detailed Estimates
4.3 Explain Budget provision.
4.4 Explain Administrative approval and technical sanction.

5.0 Management tools.

5.1 Explain Introduction and Advantages of CPM.
5.2 Explain Terms used in CPM.
5.3 Explain Formation and basic rules of network.
5.4 Explain Problems on determination of CPM.

6.0 Tenders.

6.1 State the Necessity of tenders.
6.2 Explain Procedures under laid for tenders.
6.3 Explain Comparative statement, acceptance of tenders.

7.0 Contracts.

7.1 Explain Definition and types of contracts.
7.2 State Advantages and disadvantages of each contact.

8.0 Human resource Management.

8.1 State Definition of Human resource Management
8.2 Explain Elements of Human resource Management.

9.0 Material Managements

9.1 Explain Scope of material management
9.2 State Classification of common building materials basing on procurement
9.3 Explain Procedural formalities for acquisition
9.4 List-out the Stages of material management

10.0 Management of construction Plant and Equipment

10.1 State Need for mechanization
10.2 Explain Optimum utilization of plant and equipment
10.3 Explain Centering, shuttering and scaffolding requirements

11.0 Financial Management

11.1 State Definition of Financial management
11.2 Explain cost control at Pre and Post contract Stages
11.3 Explain Financial control at Head office and site level
11.4 Explain Role of financial intuitions

12.0 Management of Tall Building Construction

12.1 State Need for tall building in urban areas
12.2 Explain Problems of designing and construction.
12.3 Explain Maintenance need and problems of Tall buildings

13.0 Total Quality Management

13.1 State Definition of TQM
13.2 Explain Elements of TQM
13.3 State Meaning and definition of quality, quality system, quality policy, quality Management,
quality control and quality assurance.
13.4 Explain Elements of quality systems

14.0 Introduction to ISO 9000

14.1 Comprehend the need of ISO.
14.2 State the Necessity of International standards.
14.3 State Indian standards on quality and construction.
14.4 Explain the Drawbacks of ISO standards
14.5 Explain the Beneficiaries of ISO standards

COURSE CONTENTS:

1.0 **Introduction** – (i) Definition of Management, (ii) Need for Scientific Management of Projects, (iii) Objectives of construction management, (iv) Scope of Construction management.

2.0 Entrepreneurship – (i) Definition, (ii) Concept, (iii) Role, (iv) Expectation and (v) Characteristics of an entrepreneur, (vi) Risks and rewards regarding (a) career, (b) personal and (c) financial.

3.0 Basics of Project Management – (i) Management and Infrastructural facilities at field

level, (ii) National Building code and (iii) Sequence of works involved in construction of a project.

4.0 Organizational aspects –(i) organisational structure of an Architect's office, (ii) Preliminary and Detailed Estimates, (iii) Budget provision, (iv) Administrative approval and (v) Technical sanction

5.0 Management tools – (i) Introduction and Advantages of CPM - (ii) Definition of various Terms used in CPM, (iii) Formation and basic rules of Network, (iv) Problems on determination of CPM.

6.0 Tenders – (i) Definition, (ii) Necessity of tenders, (iii) Procedures under laid for tenders, (iv) Tender notice, (v) Sealed tenders, (vi) Tender documents, (vii) Earnest Money and security deposits, (viii) Opening of tenders, (ix) Comparative statement, (x) Acceptance of tenders.

7.0 Contracts - (i) Definition and types of contracts, (ii) Merits and demerits of each contact, (iii) Contract document

8.0 Human resource Management –(i) Definition of human resource Management, (ii) Elements (iii) Manpower planning, (iv) Recruitment (v) Placement, (vi) Induction and training, (vii) Motivation, (viii) Performance appraisal.

9.0 Material Management - (i) Scope of material management, (ii) Classification of common building materials basing on procurement, (iii) Procedural formalities for acquisition of material, (iv) List out the Stages of material management such as (a) register of suppliers and manufacturers, (b) quantities, (c) phasing of supply schedule, (d) placing of orders, (e) Inspection, (f) acceptance, (g) monitoring purchase and supply, (v) Storage of materials**.**

10.0 Management of construction Plant and Equipment -(i) Need for mechanization, (ii) Optimum utilization of plant and equipment, (iii) Centering, shuttering and scaffolding requirements

11.0 Financial Management - (i) Definition of Financial management, (ii) cost control At Pre and Post contract Stages, (iii) Financial control at Head office and at site level, (i) Role of financial institutions.

12.0 Management of Tall Building Construction - (i) Need for tall building in urban areas, (ii) Problems such as of designing and construction, (iii) Maintenance of Tall buildings.

13.0 Total Quality Management - (i) Definition of TQM, (ii) Elements of TQM, (iii) Meanings and definitions of (a) quality, (b) quality system, (c) quality policy, (d) quality Management, (e) quality control and (f) quality assurance.

(iv) Elements of quality system – (a) Management responsibility, (b) design control, (c) document control, (d) process control, (e) Inspection, (f) testing and quality in service.

14.0 Introduction to ISO 9000 - (i) Comprehend the need and necessity of International standards, (ii) Necessity of International standards, (iii) Indian standards on quality and construction, (iv) Drawbacks of ISO standards, (v) Beneficiaries of ISO standards.

REFERENCES:

1. N.Srinivasulu -Entrepreneurship
2. T.T.T.I, Hyderabad -Total quality management
3. T.T.T.I. Chandigarh -Entrepreneurship .
4.N. Sreenivaslu - Construction management
5. P.P. Dharwadhker -Management in construction Industry Oxford IBH publishing Co. Pvt.ltd.
6.V.N. Vazirani & S.P. Chandola - Construction Management and accounts

Khanna publishers.
7. U.K. Shrivastava -Construction planning and management GalgotiaPublications pvt.Ltd.New Delhi
8. HarpalSingh - Construction Management and Accounts Tata Mc. Graw Hill Publishing Co.Ltd

Syllabus to be covered for Unit Test-I & Unit Test-II of AA-601 Entrepreneurship and Project management (C-20)

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 7.2
Unit Test – II	From 8.1 to 14.5

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	**1**	**-**		**1**						
2	Entrepreneurship	**4**	**3**		**4**				**3**		
3	Basics of project Management	**2**	**-**		**2**						
4	Organizational aspects	**6**	**8**		**1**	**5**				**8**	
5	Management Tools	**10**	**11**		**1**	**9**			**3**	**8**	
6	Tenders	**4**	**7**		**1**	**3**			**3**	**4**	
7	Contracts	**4**	**7**		**1**	**3**			**3**	**4**	
8	Human resource management	**4**	**3**		**1**	**3**				**3**	
9	Material Management	**4**	**3**		**1**	**3**				**3**	
10	Management of construction plant and Equipment	**2**	**3**			**2**				**3**	
11	Financial Management	**4**	**3**		**1**	**3**				**3**	
12	Management of Tall Building construction	**5**	**8**		**1**	**4**				**8**	
13	Total quality Management	**7**	**11**		**1**	**6**			**3**	**8**	
14	Introduction to ISO 9000	**3**	**3**		**1**	**2**				**3**	
From above all topics			**10**	**-**	**-**	**-**		**-**	**-**	**10**	
Total		60	**80**								

MODERN ARCHITECTURE (C-20)

Course Title :Modern Architecture
Course Code :AA-602
Periods/Week :04
Periods / semester :60

CO No	Topics	Course Outcomes
C01	AA-602.1	Explain the changes in architecture during industrial revolution and the advent of modern building materials and construction techniques developed all over the world.
C02	AA-602.2	Explain the contribution of pioneer architects in application of modern building materials and their architectural concepts by listing two important structures each with sketches.
C03	AA-602.3	Explain the architecture that evolved in India during British colonial rule.
C04	AA-602.4	Explain the architectural concepts of famous Indian architects after the independence by listing two important structures each with sketches.

Course Title: Modern Architecture		
Course Objectives	(i) To understand the changes in architecture during industrial revolution all over the world. (ii) To study the contribution of pioneer architects in application of modern building materials and their architectural concepts. (iii) To study the architecture that evolved in India during British colonial rule. (iv) To study the architectural concepts of Indian architects after the independence.	
Course Outcomes	C01	Explain the changes in architecture during industrial revolution and the advent of modern building materials and construction techniques developed all over the world.
	C02	Explain the contribution of pioneer architects in application of modern building materials and their architectural concepts by listing two important structures each with sketches.
	CO3	Explain the architecture that evolved in India during British colonial rule.
	C04	Explain the architectural concepts of famous Indian architects after the independence by listing two important structures each with sketches.

TIME SCHEDULE

S.NO	Major Topics	NO. of Periods	Weightage of marks	Part-A No. of short questions	Part-B No. of essay questions	Part-C essay question
1	Industrial revolution	8	11	1	1	1
2	Design theories and concepts of pioneer modern Architects	26	28	4	2	
3	Colonial architecture of India	10	14	2	1	
4	n theories, concepts and works of Contemporary Indian Architects	16	17	3	1	
	From all of the above	**-**	**10**	**-**	**-**	
	Total	**60**	**80**	**10**	**5**	

Note: A Sketch book has to be maintained by the student

LEARNING OUTCOMES:

Upon completion of the Course, the student should able to

1.0 **Industrial Revolution**

1.1 Understand the industrial Revolution and comprehend the changes in Architecture

1.2 Explain the impact of industrial Revolution on architecture, modern materials and construction techniques.

1.3 State the Advent of early structures during industrial revolution

2.0 Design theories and concepts of pioneer modern Architects

Explain the Design concepts, theories and buildings developed by the following Modern Architects.

2.1 Le-Corbusier

2.2 Frank-Lloyd Wright

2.3 Walter Gropius

2.4 Mies van der Rohe

2.5 Alvar Aalto

2.6 Ero- Sarrienen

2.7 Louis-I-Kahn

2.8 Pier-Luigi-Nervi

3.0 Colonial architecture of India

3.1 Explain Colonial architectural style of India during British period.

3.2 State the concepts of Edward Lutyens.

3.3 State the elevational aspects of RashtrapathiBhavan and Parliament building at new Delhi

4.0 Design theories, concepts and works of Contemporary Indian Architects

Explain the Design concepts, theories and buildings developed by the following modern architects

4.1 Charles correa
4.2 B.V.Doshi
4.3 Laurie Baker
4.4 Uttam Jain

COURSE CONTENTS:

1.0 Introduction

1.1 Industrial Revolution and comprehend the changes in Architecture.
1.2 Impact of industrial Revolution on architecture, modern materials and construction techniques.
1.3 Advent of early structures of industrial revolution.
1.4 Start of modern architecture.

2.0Design theories and concepts of pioneer modern Architects

2.1 Le-Corbusier

Biography, the Modular theory, Le-Corbusier 5 points of architecture and Different Building works done by the Le-Corbusier- a) Villa Savoy, France b) Unite D Habitation, France c) Le- Corbusier contribution in India-Chandigarh planning.

2.2 Frank-Lloyd Wright

Biography, Philosophy, organic architecture and different Building works done by the Frank-Lloyd Wright- Falling water, b) Solomon R Guggenheim museum,

Walter Gropius

Biography, Philosophy made by the pre and post-world wars and different building works done by the Walter Gropius- a) Fagus Factory, b) Bauhaus, Germany

2.3 Mies van Der Rohe

Biography, traditional to modernism concept, different building works done by the Mies van Der Rohe- a) Farnsworth House, b) Lake Shore drive apartment, Chicago.

2.5 Alvar Aalto

Biography, Classicism to Modernism concept, different building works done by the AlvarAalto- a) Baker House, b) Alvar Aalto studio, Helsinki

2.6 Ero- Sarrienen

Biography, different characteristics an different building works done by the Ero-Sarrienen-a) Saarinen's Gateway Arch in St.Louis, b) Dulles International airport, c) The Miller House, Columbus, Indiana

2.7 Louis-I-Kahn

Biography, different characteristics and different building works done by the Louis-I-Kahn-
a) IIM, Ahmadabad, b) Parliament Building, Dhaka

2.8 Pier-Luigi-Nervi

Biography, design theories and contributions of engineer- architect like Pier-Luigi-Nervi
(a) Palazzettodello sport, Rome, (b) Pirelli Tower, Milan

3.0 Colonial architecture of India

Colonial architectural style of India during British period-Concepts of Edward Lutyens-
Study the elevational features of RashtrapathiBhavan and Parliament building at new Delhi

4.0 Design theories, concepts and works of Contemporary Indian Architects

4.1 Charles Correa: Biography ,design theories and different building works done by the Charles correa-(a) Kanchanjunga apartment, Mumbai, (b) Tube Housing,

Ahmadabad.

4.2 B.V.Doshi

Biography, design theories and different building works done by the B.V.Doshi-(a) CEPT, Ahmadabad, (b) IIM, Bangalore

4.3 **Laurie Baker:** Biography, design theories and different building works and Auroville in Kerala.

(a) Centre for Development Studies, Ullor, (b) Indian Coffee House, Thiruvananthapuram.

4.4 **Uttam Jain:** Biography, Design theories and different building works done by the Uttam Jain-

(a) Aga khan School, Mundra, (b) Capital Complex, Naya Raipur.

REFERENCE BOOKS:

1. Bhaga.S.S-Post Independent Architecture
2. Bhatt Vikram and Scriver, Peter -Contemporary Indian Architecture after the Masters
3. Curtis.J.R.Williams -Modern Architecture since 1900
4. Jencks, Charles -The Language of Post Modern Architecture
5. Frampton.K Tad Ando -Buildings, Project Writings

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 2.8
Unit Test - II	From 3.1 to 4.4

Sl.no	Chapter name	Periods allocated	**Weightage of Marks allotted**	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Industrial revolution	8	11	2	2	3	1	7	1	2	1
2	Design theories and concepts of pioneer modern Architects	26	28	**8**	**12**	**3**	**3**	**8**	**1**	**3**	**2**
3	Colonial architecture of India	10	14	**3**	**3**	**2**	**2**	**8**	**1**	**3**	**2**
4	n theories, concepts and works of Contemporary Indian Architects	16	17	**5**	**7**	**2**	**2**	**7**	**1**	**2**	**1**
	From all of the above	**-**	**10**							**5**	**5**
	Total	**60**	**80**	**-**	**-**	**-**	**-**			**5**	**5**

R-remember U-Understanding Ap-Application An-Analyzing

PROFESSIONAL PRACTICE & BUILDING BYE-LAWS (C-20)

Course Title : professional practice & building bye-laws
Course code : AA-603
Periods/week : 03
Periods/semester : 45

CO No	Topic	Course Outcomes
CO 1	AA-603.1	StateArchitects Act - 1972 in Professional Practice and know the Code of Professional Conduct
CO 2	AA-603.2	State the requirements/Salient features of Architect's Office and its management
CO 3	AA-603.3	Explain the Architect and his relations, Condition of Engagement, Legalities, Architectural Drawings to be prepared and Execution of the given Assignment.
CO 4	AA-603.4	Know Scale of Remuneration and state Quantum Meruit and arbitration
CO 5	AA-603.5	Define the terms used in building bye-laws
CO 6	AA-603.6	State the building bye-laws according to G.O MS No. 119 &168

Course Objectives	(i) To comprehend and apply Professional Practice, Architects Act - 1972 and Code of Professional Conduct (ii) To understand need of Building bye laws for various buildings (iii) To know the Building bye laws for various buildings.	
Course Outcomes	C01	State Architects Act - 1972 in Professional Practice and know the Code of Professional Conduct
	C02	State the requirements/Salient features of Architect's Office and its management
	C03	Explain the Architect and his relations, Condition of Engagement, Legalities, Architectural Drawings to be prepared and Execution of the given Assignment.
	C04	Know Scale of Remuneration and state Quantum Meruit and arbitration
	C05	Define the terms used in building bye-laws
	C06	State the building bye-laws according to G.O MS No. 119 &168

TIME SCHEDULE

Sl.No	Major Topics	No of Periods	Weightage of Marks	Part-A No of short answer questions	Part-B No of essay answer questions	Part-C No of essay answer questions
A.	**Professional Practice**					
1	Introduction to Professional Practice	01	--		--	
2	Introduction to Architects Act - 1972	01	03		--	
3	Code of Professional Conduct	--	--	1	--	
3.1	Salient feature	01	03	1		
3.2	Structure of an Architect's office	--	--		--	
3.3	Architect's Office and its	02	08		1	
3.4	Securing clientele	01	03	1	--	
3.5	Architect and his relations	03	08		1	
3.6	Advertisement of profession	01	03	1	--	
3.7	Condition of Engagement	01	03	1	--	
3.8	Legalities in Professional Practice	03	08		1	
3.9	Architectural Drawings	01	03	1	--	
3.10	Execution of the Assignment	03	08		1	
3.11	Standard Scale of Remuneration for	02			--	
3.12	Mode of Payment	01			--	
3.13	Letter of Appointment &	01	06	2	--	
3.14	Quantum Meruit	02			--	01
3.15	Arbitration					
B	**Building bye laws**					
4	Introduction and constitution	02			--	
5	Terms and definitions	04		1	1	
6	Byelaws for buildings	15	14	1		
	From above all topics		10			
	Total	45	80	10	05	01

LEARNING OUTCOMES:

Upon completion of the subject the student should be able to.

A. Professional Practice

1.0 Introduction to Professional Practice

1.1 Introduction to professional practice

2.0 **Introduction to Architects Act - 1972**

2.1 Know COA establishment

2.2 Know Definitions of terms

2.3 Know the Qualifications and Registration of architects

3.0 **Code of Professional Conduct**

3.1 Explain the Salient features of code of conduct

3.2 Understand the Structure of an Architect's office
3.3 state the factors for establishing Architect's Office and its management
3.4 Explain how to Secure clientele
3.5 Explain Architect and his relations and ethics.
3.6 Explain code of conduct on Advertisement of profession
3.7 Explain the Condition of Engagement
3.8 Explain the Legalities in Professional Practice to be followed by Architect
3.9 State the Architectural Drawings to be prepared
3.10 Explain method of Execution of the Assignment
3.11 State the Standard Scale of Remuneration for Comprehensive Architectural services
3.12 Know the Mode of Payment
3.13 Know format of Letter of Appointment & Acceptance
3.14 Explain the Quantum Meruit
3.15 Explain Arbitration

B. BUILDING BYE-LAWS:

4.0 Introduction and constitution:

Municipal Administration and Urban Development Department-Andhra Pradesh Building Rules, 2012

4.1 Explain need of building bye laws.

4.2 State the Constitution of building bye laws as per G.O.Ms.No.119Dated: 28-03-2017 AND 168 Dated: 07.04.2012 of

Municipal Administration department, AP -Short title, applicability & commencement.

5.0 Terms and definitions:

5.1 know the definitions of Competent Authority - Enforcement Authority - Group Development Scheme - Group Housing - Height of Building - High-Rise Building - Parking Complex/Parking Lot - Sanctioning Authority – Transferable Development Right (TDR).

6.0 Byelaws for buildings:

6.1 State the Requirement of approach road for building sites / plots as per table-II

6.2 state the Permissible setbacks & height stipulations for all types of non-high-rise buildings (buildings below 18m in height inclusive of stilt /parking floor):

(a) The height of buildings permissible in a given site/ plot shall be subject to restrictions given in annexure – I & II
(b) The minimum setbacks and permissible height as per table-III

6.3 Explain the Restrictions on projections in mandatory open spaces/setbacks / interior open spaces cornice, chajjas / weather shades, balcony.

6.4 State the Setback requirements for high rise buildings as per table- IV

6.5 State the Parking requirements for all buildings as per table – V

6.6 Explain the Technical approval from the competent authority covered under Metropolitan development authorities, urban development authorities, municipal Corporations, municipalities, panchayats

6.7 State the Limitations of sanctioning authority in building sanction

COURSE CONTENT:

PROFESSIONAL PRACTICE:

1.0 Introduction to professional practice.

1.1 Introduction to professional practice

2.0 Architects Act - 1972

2.1 COA establishment

2.2 Definitions of terms Code of Conduct, Profession, Ethics, Client

2.3 Qualifications and Registration of architects

3.0 Code of Professional Conduct

3.1 Salient features of Code of Professional Conduct.

3.2 Know the Structure of an Architect's office

3.3 Establishment of Architect's Office and its management

3.4 Know the Securing clientele in an approved way by code of conduct.

3.5 Architect and his relations with Society, Client, his Brothers in Profession, his Employees, Associates and Consultants.

3.6 Advertisement of profession - Prohibition and allowances on advertisement of profession and his name

3.7 Condition of Engagement-its importance

3.8 Legalities in Professional Practice to be followed by Architect- definitions of Act, Law, Legality, Rule-Conditions of Agreement like Client's responsibilities, Schedule of services, Scope of work-

3.9 Architectural Drawings-floor plans, elevations, sections, site plans, schedule of doors &windows, fixtures of ware supply and sanitary

3.10 Execution of the Assignment

3.11 Standard Scale of Remuneration for Comprehensive Architectural Services

3.12 Mode of Payment-preliminary from stages 1 to 6 and construction from stages 7 and 8

3.13 Letter of Appointment & Acceptance as per the COA norms

3.14 Quantum Meruit -procedure

3.15 Arbitration- need, qualification and appointment of arbitrator, procedure of arbitration

BUILDING BYE-LAWS:

Municipal Administration and Urban Development Department – AndhraPradesh Build Rules, 2012

4.0 Introduction & constitution

4.1 Need of building bye laws-constitution of building bye laws as per G.O.Ms.No.Dated: 28-03-2017 and G.O.Ms.No.168 Dated:07.04.2012 of Municipal administration department, AP -Short title, applicability & commencement

5.0 Terms and definitions

5.1 Competent Authority - Enforcement Authority - Group Development Scheme - Group Housing - Height of Building - High-Rise Building - Parking Complex/Parking Lot - Sanctioning Authority - Transferable Development Right (TDR).

6.0 **Byelaws for buildings**

6.1 Requirement of approach road for building sites / plots as per table-II

6.2 Permissible setbacks & height stipulations for all types of non-high-rise buildings (Buildings below 18m in height inclusive of stilt /parking floor):

(a) the height of buildings permissible in a given site/ plot shall be subject to restrictions given in annexure – I & II

(b) the minimum setbacks and permissible height as per table-III

6.3 Restrictions on projections in mandatory open spaces/setbacks / interior / cornice, chajjas / weather shades (sunshades), balcony
6.4 Set back requirements for high rise buildings as per table- IV
6.5 Parking requirements for all buildings as per table – V
6.6 Technical approval from the competent authority covered under Metropolitan development authorities, urban development authorities, municipal corporations, municipalities, panchayats
6.7 Limitations of sanctioning authority in building sanction

REFERENCE BOOKS

1. Roshan Namavathi : Professional practice
2. I.I.A. Council of Architectures : Professional Practice
3. AndhraPradesh Build Rules, 2012 : Municipal Administration and Urban Development Department
4. G.O.Ms.No.119 &168 Dated: 07.04.2012 of Municipal administration department, A.P

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test - II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 3.15
Unit Test - II	From 4.1 to 6.7

AA-603 Professional Practice and Building bye-laws (C-20)

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Mark wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
A. Professional Practice											
1	Introduction to Professional Practice	01	--								
2	Introduction to Architects Act - 1972	01	03		**2**				**3**		
3	Code of Professional Conduct	-- -- --	--								
3.1	Salient feature	01	03		**1**				**3**		
3.2	Structure of an Architect's office	--	--								
3.3	Architect's Office and its management	02	08		**2**				**8**		

3.4	Securing clientele	01	03		**1**				**3**		
3.5	Architect and his relations	03	08		**3**				**8**		
3.6	Advertisement of profession	01	03		**1**				**3**		
3.7	Condition of Engagement	01	03		**1**				**3**		
3.8	Legalities in Professional Practice to be followed by Architect	03	08		**3**				**8**		
3.9	Architectural Drawings	01	03		**1**				**3**		
3.10	Execution of the Assignment	03	08		**3**				**8**		
3.11	Standard Scale of Remuneration for Comprehensive Architectural Services ,	02	06		**6**			**3**	**3**		
3.12	Mode of Payment	01									
3.13	Letter of Appointment & Acceptance	01									
3.14	Quantum Meruit	02									
3.15	Arbitration										
B	**Building bye laws**										
4	Introduction and constitution	02	14		**21**			**6**	**8**		
5	Terms and definitions	04									
6	Byelaws for buildings	15									
	From above all topics		10								**10**

R-remember U-Understanding Ap-Application An-Analysing

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STRUCTURAL DESIGN (C-20)

Course Title : STRUCTURAL DESIGN
Course Code : AA-604
Periods/Week : 06
Periods/Semester : 90

CO No	Topic	Course Outcomes
CO 1	AA-604.1	Understand the importance of IS Codes & concrete technology.
CO 2	AA-604.2 & 3	Understand the philosophy of limit state design and performs design of singly reinforced, doubly reinforced R.C.C rectangular beams and slabs.
CO 3	AA-604.4	Understand the principles involved in the analysis of T-beams and perform design calculations.
CO 4	AA-604.5 & 6	Understand the principles involved in the analysis of columns & footings and perform design calculations.

STRUCTURAL DESIGN		
Course Objectives	(i) To make students to be familiar with the principles of methods of design of R.C. Elements subjected to flexure, compression, shear and torsion (ii) To enable the student to design various R.C. Elements.	
Course Outcomes	C01	Understand the importance of IS Codes & concrete technology.
	C02	Understand the philosophy of limit state design and performs design of singly reinforced, doubly reinforced R.C.C rectangular beams and slabs.
	C03	Understand the principles involved in the analysis of T-beams and performs design calculations.
	C04	Understand the principles involved in the analysis of columns & footings and performs design calculations.

TIME SCHEDULE

Sl.No.	Major Topics	No. of Periods	Weightage of Marks	No of Part-A short ans. questions	No of Part-B questions	No of Part-C essay ans. Questions
1	Introduction to Concrete Technology and R.C.C	10	06	02	-	01

2	Analysis and Design of rectangular beams	20	14	02	01	
3	Design of slabs	20	14	02	01	
4	Analysis and strength of T-beams	12	11	01	01	
5	Analysis and design of columns	18	14	02	01	
6	Design of R.C.C footings	10	11	01	01	
	From any one topic of all the above topics.	-	10	-	-	
	Total	**90**	**80**	**10**	**05**	**01**

LEARNING OUTCOMES

Upon the completion of the Course the student will be able to

1.0 Introduction to Concrete Technology and R.C.C

1.1 State the factors affecting variability of concrete strength.
1.2 Explain the grades of concrete, workability.
1.3 State the types and uses of admixtures in concrete.
1.4 Know about various special concretes like Fiber Reinforced Concrete, Fal-G-Concrete, Light weight concrete, High density concrete, Polymer concrete and Self compacting concrete
1.5 Know about concreting under special exposure conditions like under- water concreting, cold weather concreting, hot weather concreting and concreting in high rise buildings
1.6 State the codes used for R.C.C design
1.7 Explain the function of reinforcing steel in R.C.C design.
1.8 State the various loads in the design of R.C.C elements.
1.9 State the various nominal mixes.
1.10 State the principles in the mix design of concrete (No design)
1.11 Understand fundamental principles of pre-stressed concrete.

2.0 Analysis and design of rectangular beams.

2.1 Define Limit state method as per IS 456-2000.
2.2 Calculate the maximum depth of neutral axis, lever arm and moment of resistances for singly reinforced beams. Moment of resistance of doubly reinforced rectangular beams. Also calculate the allowable working load for the given span.
2.4 Calculate the nominal shear stress, shear resisted by bent up bars and spacing

of vertical stirrups. Design of shear reinforcement for the singly reinforced rectangular beam.

2.5 Calculate the development length of bars in compression, tension, and the curtailment position for main tension bars. State the importance of anchorage values of reinforcement.

2.6 Design a singly reinforced simply supported rectangular beam for the given grades of materials, span and loading, for flexure including shear design, check for the deflection using simplified approach of the code.

3.0 Design of slabs

3.1 Distinguish one-way slabs and two-way slabs

3.2 Design one-way slab for given grades of materials, loads and span for flexure and including shear design. Check for deflection using stiffness criteria.

3.3 Load distribution in two-way panels. Design of two-way panels with different end conditions for flexure including shear using B.M and S.F coefficients. Provision of torsion reinforcement in the restrained panels.

4.0 Analysis and strength of T-beams.

4.1 Describe the three cases of T-beams with sketches and notations.

4.2 Calculate the moment of resistance of the given Tee section using the expressions given in the code.

5.0 Analysis and Design of columns

5.1 Know the Code provisions of columns

5.2 Differentiate between short and long columns and their behaviour.

5.3 Design Short Square, rectangular, circular columns with lateralties subjected to Axial load only.

6.0 Design R.C.C footings.

6.1 Explain the code provisions for the design of R.C.C footings.

6.2 Design the square footing of uniform thickness for an axially loaded square column.

Note: Students may be encouraged to use SP-16 for design of slabs, beams and column for general practice. However, SP-16 is not allowed in the Examination.

COURSE CONTENTS

1.0 Introduction to Concrete Technology and R.C.C

a) Codes of practice of R.C.C design, Types of reinforcement used.

b) Grades of concrete- characteristic compressive strength, modulus of elasticity of concrete, workability for different condition of placing concrete. Loads to be adopted in R.C.C. design – dead load. Live load, wind load, as per IS 875-1987.Mixes of concrete – nominal mix, design mix (no design).

2.0 Analysis and design of rectangular beams

a) Stress-strain diagram of singly reinforced RCC beam – depth of neutral axis, lever arm and moment of resistance of singly reinforced – rectangular section – balanced, under reinforced and over reinforced sections. Critical percentage of steel. Calculation of moment of resistance of the given section and design of singly reinforced rectangular beam for the given load as per IS 456-2000.

b) Doubly reinforced sections - necessity, use. Calculation of neutral axis, and moment of resistance for the given section and grades of concrete and steel. (no derivation of the equations)

c) Shear in singly reinforced beams - nominal shears stress, permissible shear stress – methods of providing shear reinforcement in the form of vertical stirrups, combination of vertical stirrups and bent up bars. Code provisions for spacing of stirrups and minimum shear reinforcement (no derivation of equations)

d) Development of bond stress in reinforcing bars - design bond stress - development length – bond and anchorage concepts and their importance. Simple problems on development length.

e) Design of simply supported singly reinforced rectangular beam for flexure including shear and check the deflection using stiffness criteria.

3.0 Design of slabs

a) Function of slabs as structural and functional members-one way and two-way slabs-minimum reinforcement and maximum spacing – concrete cover-stiffness criterion-stiffness ratios for simply supported, cantilever and continuous slabs-one way and two-way slabs with various end conditions as per I.S 456 code.

b) Design of one-way slab for flexure and shear for the given grades of concrete, steel, span and loading. Check for deflection using simplified approach of stiffness criteria.

c) Design of two-way slabs with different end conditions, using B.M and S.F coefficients for the unrestrained and restrained conditions as per code. Design of torsion reinforcement for the restrained slabs.

4.0 Analysis and strength of T- beams.

a) Development of t-beam cross section – advantages – code provisions for effective flange width - three cases of tee beams – neutral axis, lever arm and moment of resistance for under reinforced, balanced sections using the equations given in the code. (no derivations)

b) Calculate the moment of resistance of tee section using the equations given in the code.

5.0 Analysis and design of columns

a) Functions of columns – code provisions - types of columns - square, rectangular and circular columns with lateral ties.

b) Short and long columns, failure by axial compression and by buckling (Theoretical part only)

c) Long columns – concept - effective length for different end conditions.

d) Design of short column subject to axial load only. Design of short square, rectangular and circular columns with lateral ties.

6.0 Design of R.C.C footings

a) Footings-Need for footings-footings under isolated columns–loads on foundations–size of footings for given bearing capacity.

b) Design of an isolated footing of uniform thickness under a column. Checking of the footing for one way and two-way shear. Check for development length.

REFERENCES

1. Ashok K.Jain -*'Limit state design of R.C.C structures'* , Nemchand brothers, Roorkee.

2. T.T.T.I Chennai -'Limit state Design of concrete structural elements, continuing Education module , 'I.ST.E continuing education cell, university Visveswaraiah College of Engineering (UVCE)Campus, Palare Road, Bangalore – 560001.

3. Ramamrutham -Structural Engineering (RCC).

4. Vazirani and Ratwani -Structural Engineering (RCC).

5. M.F Sharief and V.V.S Murthy -Structural Engineering (RCC).
6 Guru charan Singh -R.C.C Structural Engineering.

Syllabus to be covered for Unit Test-I & Unit Test-II of AA-604 Structural Design (C-20)

Unit Test	Learning Outcomes to be covered
Unit Test – I	From 1.1 to 3.2
Unit Test – II	From 3.3 to 6.2

Cos mapped Model question paper for Unit Test-II of AA-604 Structural Design (C-20)

Q.No	Question	Bloom's category	Marks allocated	CO addressed
Part - A (16 marks)				
1.a	Analysis of T-beam is mainly based on position of -------	Understanding	1	CO3
1.b	A minimum of 8 bars are required for a rectangular column (True/ False)	Understanding	1	CO4
1.c	The diffentiation between short column and long column is based on ---- ration.	Understanding	1	CO4
1.d	--------type of footings are used when area is very limited.	Application	1	CO4
2	State any three advantages of T-beams.	Remembering	3	CO3
3	Distinguish between long columns and short columns.	Remembering	3	CO4
4	A reinforced concrete column of size 300 mm x 300 mm carries a load700 kN. The SBC of soil is 200 kN/m^2. Find the size of footing. Use M 20 grade concrete and Fe 415 steel		3	CO4
5	What are the specifications for lateral ties in a column?	Remembering	3	CO4
Part - B (24 marks)				
6.a	A T-beam of effective flange width of 740 mm , thickness of slab80 mm, width of rib 230 mm and effective depth 400 mm is reinforced with 5 numbers of 20 mm diameter bars. Calculate the moment of resistance of the section. M-20 grade concrete and Fe-250 grade steel bars are used.	Analysis	8	CO3
OR				
6.b	A T-beam of effective flange width of	Analysis	8	CO3

	1200 mm , thickness of slab100 mm, width of rib 300 mm and effective depth 460 mm is reinforced with 4 numbers of 16 mm diameter bars. Calculate the moment of resistance of the section.M-20 grade concrete and Fe-415 grade steel bars are used.			
7.a	Design the short axially loaded rectangular column to support an axially load of 800kN.One end of the column is restricted to 300 mm. Use M-20grade concrete and Fe-500 steel.	Application	8	CO4
OR				
7.b	Design a circular column to carry an axial load of 1200 kN using lateral ties. Use M-25 grade concrete and Fe-415 HYSD bars	Application	8	CO4
8.a	List and explain the steps for design of isolated square footing uniform thickness to support an axially loaded square column.	Remembering	8	CO4
OR				
8.b	Design a square footing of uniform thickness for aconcrete column400 mm x 400 mm carrying an axial load of 500 kN. The safe bearing capacity of soil is 150 kN/ m^2. Use M-20 grade concrete and Fe-415 steel. Check for one-way and two-way shear only.	Application	8	CO4

Blue Print of a question paper AA-604 STRUCTURAL DESIGN(C-20)

Part-A: 30 marks ,10 questions,3 marks each, **NO CHOICE**-60 minutes (6 Minutes each question)

Part-B: 40 marks, 5 questions, 8 marks each, **EITHER OR TYPE**-90 minutes (18 Minutes each question)

Part-C: 10 marks 1 question, -30 minutes **(Higher Order Question)**

Sl.no	Chapter name	Periods allocated	**Weightage of Marks allotted**	Periods wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction to Concrete Technology	10	06	4	4	2		4	2		

	and R.C.C										
2	Analysis and Design of rectangular beams	20	14	**2**	**8**	**2**	**8**		**5**	**4**	**5**
3	Design of slabs	20	14	**2**	**8**	**2**	**8**		**5**	**4**	**5**
4	Analysis and strength of T-beams	12	11		**8**		**4**		**6**		**5**
5	Analysis and design of columns	18	14	**2**	**8**	**2**	**6**		**5**	**4**	**5**
6	Design of R.C.C footings	10	11		**4**	**2**	**4**		**2**	**4**	**5**
	From above all topics		**10**	**-**	**-**	**-**	**-**			**5**	**5**
		90	**80**								

R-remember
U-Understanding
Ap-Application
An-Analyzing

URBAN PLANNING (C-20)

Course Title : Urban Planning
Course Code : AA-605
Periods / Week : 03
Periods / Year : 45

CO No	Topic	Course Outcomes
CO 1	AA-605.1	Explain the Importance and need, origin, objectives and principles of Town planning
CO 2	AA-605.2	Explain the Forms and patterns of Vedic, ancient and modern towns of India.
CO 3	AA-605.3	Explain the Development plans, its need, data to be collected, stages and preparation of drawings, color codes for land use maps and types of planning.
CO 4	AA-605.4	Explainthe Zoning, objectives, principles, advantages and types of zoning
CO 5	AA-605.5	Explainthe Transportation planning, advantages, disadvantages, need, Hierarchy of roads and street furniture.

Course Title: URBAN PLANNING		
Course Objectives	i)To understand Urban Planning & Legislation, its Importance, need, origin, objectives and principles. ii) To understand the forms and patterns of Vedic and modern towns of India. **iii)** To understandthe Development plans, its need, data to be collected, stages and preparation of drawings, color codes for land use maps and types of planning. iv) To understandthe Zoning, its objectives, principles, advantages and types of zoning. v) To understand Transportation planning, advantages, disadvantages, need, Hierarchy of roads and street furniture.	
Course Outcomes	**C01**	Explain the Importance and need, origin, objectives and principles of Town planning
	C02	Explain the Forms and patterns of Vedic, ancient and modern towns of India.
	C03	Explain the Development plans, its need, data to be collected, stages and preparation of drawings, color codes for land use maps and types of planning.
	C04	Explain the Zoning objectives, principles, advantages and types of zoning
	C05	Explain the Transportation planning, advantages, disadvantages, need, Hierarchy of roads and street furniture.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks	Part-A short questions	Part-B questions	Part-C Essay question
1.	Introduction	09	20	2	1	1
2.	Forms and Patterns of Towns	06		2		
3.	Development Plans	12	22	2	2	
4.	Zoning	12	14	2	1	
5.	Transportation	06	14	2	1	
From above all Topics		-	**10**	-	-	
	Total:	**45**	**80**	**10**	**5**	**01**

LEARNING OUTCOMES

Upon the completion of the subject the student shall be able to

1.0 Introduction

1.1 Explain the term Urban Planning & Legislation.

1.2 Explain the Need of Town Planning.

1.3 Explain the Evolution of Towns and Origin of Towns.

1.4 Explain the Principles and Objectives of town planning.

2.0 Forms and Patterns of Towns

2.1 Explain the Basic concepts of Vedic Town Planning.

2.2 Explain the Town forms and Patterns of Ancient Towns.

2.3 Explain the Modern Town Forms.

3.0 Development Plans

3.1 Explain the Definition of Development plans.

3.2 Explain the need of Development Plans.

3.3 Explain the Data to be collected for preparing a Development plan

3.4 Explain the Drawings to be prepared for a development plan

3.5 Explain the Stages of Preparing a Development Plan.

3.6 Explain the Colour codes to be used in different Development Plans

3.7 Explain in brief the National, Regional and Local planning with examples.

4.0 Zoning

4.1 Explain the Definition of Zoning.

4.2 Explain the Objectives and principles of zoning

4.3 Explain the Advantages of zoning

4.4 Explain the Types of zoning: density zoning, height zoning and use zoning.

5.0 Transportation:

5.1 Explain the transportation planning.

5.2 Explain the Need of Transportation Planning for Cities.

5.3 Explain the Advantages and disadvantages of transportation planning.

5.4 Explain the Hierarchy of roads.

5.5 Explain the Street furniture.

COURSE CONTENTS

1.0 Introduction

Urban Planning & Legislation - Need of Town Planning-Evolution of Towns and Origin of Towns-Principles and Objectives of town planning.

2.0 Forms and Patterns of Towns

Basic concepts of Vedic Town Planning-Town forms and Patterns of Ancient Towns-Modern Town Forms.

3.0 Development Plans

Definition of Development plans-need of Development Plans-Data to be collected for preparing a Development Plan-Drawings to be prepared for a development plan-Stages of Preparing a Development Plan-Colour codes to be used in different Development Plans-National, Regional and Local planning with examples.

4.0 Zoning

Definition of Zoning-Objectives and principles of zoning-Advantages of zoning-Types of zoning: density zoning, height zoning and use zoning.

5.0 Transportation:

Transportation planning-Need of Transportation Planning for Cities-Advantages and disadvantages of transportation planning-Hierarchy of roads-Street furniture.

Reference books:

1. SC.Rangwala- Town Planning by
2. NV. Modak & VN. Ambdekar-Town and Country Planning and Housing
3. KS. Rama Gowda- Urban & Regional Planning
4. Gallion- Urban Pattern

Table specifying the scope of syllabus to be covered for Unit test –I & Unit Test – II

Unit Test	Learning Outcomes to be covered
Unit Test - I	From 1.1 to 3.4
Unit Test - II	From 3.5 to 5.5

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Introduction	**9**	**20**	**5**	**15**	**-**	**-**	**5**	**15**	**-**	**-**
2	Forms and Patterns of Towns	**6**									
3	Development Plans	**12**	**22**	**2**	**10**	**-**	**-**	**2**	**20**	**-**	**-**
4	Zoning	**12**	**14**	**2**	**10**	**-**	**-**	**2**	**12**	**-**	**-**
5	Transportation	**6**	**14**	**1**	**5**	**-**	**-**	**2**	**12**	**-**	**-**
From above all Topics			**10**	**-**	**-**	**-**	**1**	**-**	**-**	**-**	**1**

R-remember
U-Understanding
Ap-Application
An-Analyzing

RT-A **10 x 3 = 30 Marks**

BUILDING SERVICES DRAWING

Course Title : Building services Drawing
Course Code : AA-606
Periods / Week : 06
Periods / Semester : 90

CO No	Topic	Course Outcomes
C01	AA-606.1	ExplainWater supply and sanitation systems for Buildings
C02	AA-606.2	Explain the Electrical and illumination requirements for Buildings
C03	AA-606.3	Explain Air conditioning systems for Buildings
C04	AA-606.4	Explain Acoustics and its applications
C05	AA-606.5	Explain IoT and its applications
C06	AA-606.6	Explain Renewable energy and its applications and green buildings.

Building Services Drawing		
Course Objectives	i	To understandWater supply and sanitation
	ii	To understand Electrical and aspects of illumination.
	iii	To understand the concepts of Air conditioning and Acoustics
	iv	To understand IoT and renewable energy and Green buildings.
Course Outcomes	C01	ExplainWater supply and sanitation systems for Buildings
	C02	Explain the Electrical installations and illumination requirements for Buildings
	C03	Explain Air conditioning systems for Buildings
	C04	Explain Acoustics and its applications
	C05	Explain IoT and its applications
	C06	Explain Renewable energy and its applications and Green buildings.

TIME SCHEDULE

Sl. No.	Major Topics	**No. of Periods**	**Weightage of Marks**	**short questions**	**essay questions**
1	Water supply and sanitation	24	15	1	1
2	Electrical and Illumination	24	15	1	1
3	Air conditioning	15	15	1	1
4	Acoustics	9	10		1
5	IoT	9	15	1	1
6	Renewable energy and green Buildings	9	10		1
	TOTAL	**90**	**80**	**4**	**6**

Note for End Examination:

Duration of exam is for **3 hours** (one session only)

Part-A: Answer all the **Four** questions and each question carry **Five** marks.

Part-B: Answer any **Four** questions out of **Six** and each question carries **Ten** Marks.

Part –A & B should be answered on big drawing sheets.

LEARNING OUTCOMES

Upon the completion of the subject the student shall be able to

1.0 Water supply and sanitation

1.1 Explain Principles of water supply, sanitary and Drainage system for a building
1.2 Explain Water supply and sanitary fittings and fixtures
1.3 Explain storage and distribution of Water sump and OHT tanks
1.4 Explain and draw septic tank, and rain water harvesting pits for a residential building.

2.0Electrical and Illumination

2.1 Explain Power supply: AC and DC Distribution system
2.2 Explain Electrical Wiring accessories, fitting and fixtures.
2.3 Explain Lighting accessories and fixtures.
2.4 Explain and draw electrical wiring drawing for a two bed room residence.
2.5 Explain different types of illumination systems suitable for various spaces.

3.0 Air conditioning

3.1 Explain Fundamentals of air conditioning and Air-conditioning Equipment
3.2 Explain different types of Air conditioning systems.
3.3 Explain A/C cycle system and components such as fans, supply ducts, outlets, return outlets, and Filters& dust Collectors-Wet, Dry, electric & Viscous type, Heating and cooling coils.
3.4 Explain and Draw the layout drawing of functioning of A/C System.

4.0 Acoustics

4.1 Explain principles of Acoustics.
4.2 Explain Sound absorbing materials and accessories.
4.3 Application of acoustics in various types of buildings
4.4 Draw the plan and cross-sectional details of an acoustically designed home theatre and label their parts.

5.0 IoT

5.1 Explain IoT
5.2 Explain the working system of IoT
5.3 Explain key features and components of IoT
5.4 IoT application in buildings.
(i) Home (ii) offices (iii) institutions
5.5 IoT application in town planning.
Transportation (ii) Street lighting (iii)security
5.6 Explain and Draw the home automation layout plan for a residence and label their parts.

6.0 Renewable energy and Green buildings.

6.1 ExplainDifferent types of Renewable sources of energy i) Solar, ii) Wind iii) Bio-energy
6.2 Explain the Application of solar energy in buildings.
6.3 Draw the solar water heating system layout plan for a residence and label their parts.
6.4 What is Green building.
6.5 Explain the benefits of Green buildings.

COURSE CONTENTS

1.0 Water supply and sanitation

Principles of water supply, sanitary and Drainage system for a building-Explain Water supply and sanitary fittings and fixtures- storage and distribution of Water sump and OHT tanks-septic tank, and rain water harvesting pits for a residential building.

2.0Electrical and Illumination.

Power supply: AC and DC Distribution system -Electrical Wiring accessories, fitting and fixtures -Lighting accessories and fixtures- electrical wiring drawing for a two bed room residence. Illumination-functional and aesthetic aspects.

3.0 Air conditioning

Fundamentals of air conditioning and Air-conditioning Equipment -different types of Air conditioning systems- A/C cycle system and components such as fans, supply ducts, outlets, return outlets, and Filters& dust Collectors-Wet, Dry, electric & Viscous type, Heating and cooling coils-drawing of functioning of A/C System.

4.0 Acoustics

Principles of Acoustics-Sound absorbing materials and accessories-Application of acoustics in various types of buildings-plan and cross-sectional details of an acoustically designed home theatre and label their parts.

5.0 IoT

IoT - the working system of IoT - key features and components of IoT-IoT application in buildings i) Home (ii) offices (iii) institutions-IoT application in town planning(i)Transportation(ii) Street lighting(iii)security -Home automation layout plan for a residence and label their parts.

6.0 Renewable energy and green buildings.

Different types of Renewable sources of energy i) Solar, ii) Wind iii) Bio-energy - Application of solar energy in buildings-solar water heating system layout plan for a residence and label their parts. Green buildings-benefits-case study of CESE building at IIT, Kanpur.

Exercises:

1) Draw external water supply and sanitary layout drawing.
2) Draw internal water supply and sanitary layout drawing.
3) Draw different types of P, Q, S, Gully, floor, and intercepting traps.
4) Sketch of single/ double compartment septic tank.
5) Draw an electrical wiring drawing for a two bed room residence.
6) Draw the layout drawing of functioning of A/C System.
7) Draw the plan and cross-sectional details of an acoustically designed home theatre and label their parts.
8) Draw the home automation layout plan for a residence and label their parts.
9) Draw the solar water heating system layout plan for a residence and label their parts.

REFERENCE BOOKS:

1) MC Kay - Building construction -I, II, III & IV Volumes.
2) Berry -Building ConstructionVolumes I, II, III and IV
3) S.C. Rangwala- Building Construction
4) N.R.R. Moorthy- Building Construction
5) S.P.Bindra & S.P.Arora- Building Construction
6) ISI, NBC
7) GRIHA-Manual Volume-I
8) ECBE Manual.

Question paper pattern

Part-A: 20 marks, 4 questions 5 marks each, NO **CHOICE**- (15 Minutes each question)

Part-B: 40 marks, 4 questions out of 6 questions, 10 marks each, (30 Minutes each question)

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Water Supply and Sanitation	24	15		**4**	**20**			**5**	**10**	
2	Electrical and illumination	24	15		**4**	**20**			**5**	**10**	
3	Air Conditioning	15	15		**7**	**8**			**5**	**10**	
4	Acoustics	9	10		**5**	**4**				**10**	
5	IoT	9	15		**5**	**4**			**5**	**10**	
6	Renewable energy and green buildings	9	10		**5**	**4**				**10**	
	Total	**90**	**80**								

R-remember
U-Understanding
Ap-Application
An-Analyzing

WORKING DRAWINGS PRACTICE LAB (C20)

Course Title : Working Drawings Practice Lab
Course Code : AA-607
Periods / Week : 04
Periods / Semester : 60

CO No	Topic	Course Outcomes
C01	AA-607.1	i) Drawworking drawings of residential buildingsfor various stages of construction
C02	AA-607.2	ii) Draw municipal drawings
C03	AA-607.3	iii) Drawworking drawings for site planning

Course title: Working Drawings Practice lab		
Course objectives	I) To draw working drawings for residential buildings	
Course outcomes	**C01**	i) Draw working drawings of residential buildings for various stages of construction
	C02	ii) Draw municipal drawings
	C03	iii) Draw working drawings for site planning

TIME SCHEDULE

Sl. No.	Major Topics	No. of Periods
1	Working drawings of Residential Buildings for various stages of construction	36
2	Municipal drawings	8
3	Working drawings for site planning	16
	TOTAL	60

LEARNING OUTCOMES
Upon the completion of the subject the student shall be able to

1.0 Working drawings for a given Residential buildingfor various stages of construction

1.1 Foundation level: Centre line Drawing for Excavation of trenches and footing details.
1.2 Plinth level: Centre line drawing of plinth beam and DPC
1.3 Super structure level: Masonry walls –centre line drawing for walls,location of doors and windows.
1.4 Lintel level: Drawings related to Beams lintels, lofts, sunshades, porticos.
1.5 Roof level: Beam positions, slab drawings, projections, balconies and Cantilevers.

1.6 Elevations: Detailed working drawings for elevations, projections of masses, solids and voids, etc.
1.7 Sections: Detailed working drawings for sections.
1.8 Vertical circulation spaces: Detailed working drawings for lifts and Stair cases.

2.0 Municipal Drawings

2.1 Draw municipal drawings applying the setbacks and byelaws for Residential Buildings

3.0 Working drawings for Site Planning

3.1 Draw working drawings for site showing building, driveways, parking, landscape and other features.

COURSE CONTENTS

1.0 Working drawings for given Residential buildings for various stages of construction

1.1 Foundation level: Centre line Drawing for Excavation of trenches and footing details.
1.2 Plinth level: Centre line drawing of plinth beam and DPC
1.3 Super structure level: Masonry walls –centre line drawing for walls location of doors and windows.
1.4 Lintel level: Drawings related to Beams lintels, lofts, sunshades, porticos.
1.5 Roof level: Beam positions, slab drawings, projections, balconies and Cantilevers.
1.6 Elevations: Detailed working drawings for elevations, projections of masses, solids and voids, etc.
1.7 Sections: Detailed working drawings for sections.
1.8 Vertical circulation spaces: Detailed working drawings for lifts and Stair cases.

2.0 Municipal Drawings

2.1 Draw municipal drawings applying the setbacks and byelaws for Residential Buildings

3.0 Working drawings for Site Planning

3.1 Draw working drawings for site showing building, driveways, parking, landscape and other features.

Note:

The student has to submit a complete portfolio of working Drawings based on the given PDF Drawings of a residential building. The following drawings are to be drawn in AutoCAD for internal evaluation:

- Centre line Drawing for Excavation of trenches and footing details.
- Centre line drawing of plinth beam and DPC
- Working Drawing for Ground and typical floor Plan of the building showing columns, masonry walls, location of doors and windows.
- Lintel level: Working drawing showing lintels, lofts, sunshades, porticos, etc.
- Roof level: Working Drawing showing Beam positions, slab drawings, projections, balconies and Cantilevers.etc.
- Elevations: Detailed working drawings for elevations, projections of masses, solids and voids, etc.
- Sections: Detailed working drawings for sections.
- Vertical circulation spaces: Detailed working drawings for lifts and Stair cases.
- Municipal drawing applying the setbacks and byelaws.
- Working drawings for site showing building, driveways, parking, landscape and other features.

Reference Books:

1) MC Kay- Building construction -I, II, III & IV Volumes.
2) Berry- Building Construction - Volumes I, II, III and IV
3) Rangawala. S.C- Building Construction
4) N.R.R. Moorthy- Building Construction
5) S.P.Bindra & S.P.Arora- Building Construction
6) ISI- NBC
7)Neufurt's data

- **Internal Exam 40 Marks .**40 Marks will be awarded for internal assessment
- **External exam 10 Marks Remembering+20 Marks Understanding + 30 Marks Practical**

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weight age of marks	Period wise distribution of weight age				Mark wise distribution of weight age			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Working drawings for Building construction	36	**30**	**4**	**6**	**26**		**5**	**5**	**10**	**10**
2	Working drawings for site planning	8	**20**		**3**	**5**		**5**	**5**	**5**	**5**
3	Working drawings for landscape	16	**10**		**4**	**12**		**2**	**2**	**3**	**3**
	Total	60	**60**								

R- Remember
U- Understanding
Ap- Application
An- Analyzing

Life Skills

Course Code	Course Title	No. Of Periods/Week	Total No. Of Periods	Marks for FA	Marks for SA
AA-608	Life Skills	3	45	40	60

S. No.	Unit Title	No of Periods	Cos Mapped
1	**Attitude**	**4**	CO1
2	**Adaptability**	**4**	CO1, CO2
3	**Goal Setting**	**4**	CO1, CO2, CO3
4	**Motivation**	**4**	CO1, CO2, CO3
5	**Time Management**	**4**	CO2
6	**Critical thinking**	**4**	CO3
7	**Creativity**	**4**	CO3
8	**Problem Solving**	**5**	CO3
9	**Team Work**	**4**	CO4
10	**Leadership**	**4**	CO4
11	**Stress Management**	**4**	CO4
Total Periods		**45**	

Course Objectives	To understand the importance of Life skills for acceptable, sustainable and ethical behaviour in academic, professional and social settings
	To exhibit language competence appropriate to acceptable social and professional behaviour.
	To demonstrate time management, stress management, team skills, problem solving ability to manage oneself in academic, professional and social settings.

CO No.	Course Outcomes
CO1	Demonstrates positive attitude and be able to adapt to people and events
CO2	Fixes personal and professional goals and manages time to meet targets
CO3	Exhibits critical and lateral thinking skills for problem solving.
CO4	Shows aptitude for working in teams in a stress free manner and sometimes/ very often/ mostly display leadership traits.

Blue Print for evaluation based on Course Outcomes for SA:

Note: Every Activity based Question that focuses on Cos and responses as exhibited through communication has to be given marks for the following parameters

- Clarity of Thinking as Exhibited through Content
- Features of Etiquette

***Rubric Descriptors 'Outstanding/ Very Good/ Good/ Satisfactory/ Poor' levels of Competence**

Level of Competence	Parameters of Assessment	
	Clarity of thinking as exhibited through content	**Features of etiquette**
Outstanding 10	**Thinking** is **extremely logical** and suggested course of action is **feasibile** Shows **creativity and uniqueness** Exhibits **expert use of expression** (organizational devices and discourse markers) that denote clarity in thought.	Exhibits **courtesy to all most appropriately** with**confidence**
Very Good 8/9	**Thinking** is **clear and logical** Suggested **course of action is feasible** Shows **traces of creativity** Exhibits **good expression** (organizational devices and discourse markers) that denote clarity in thought.	Exhibits **courtesy to all** **to a considerable level.**
Good 6/7	**Thinking is clear and logical most of the time**. Lacks creativity or out of the box thinking as expressed through content.	Exhibits **courtesy / politeness to an acceptable level.**
Satisfactory 4/5	**Thinking is logical**; However**expressing content is disjointed and disorganized.**	Has courtesy but often fumbles with language.
Poor 3 or less than 3	**Thoughts** as expressed through content are **incoherent.Language skills are very limited.**	Fails to show courtesy to others.

Blue Print for evaluation based on Course Outcomes for SA of each student:
Note: Marks are awarded for each student as per the Rubric descriptors.

S No.	Questions based on Course Outcomes	Periods Allocated for practical work	Max Marks	Poor >3	Satisfactory 4 /5	Good 6/7	Very Good 8/9	Outstanding 10
1	Short presentation on GOALS with Timeline and Action Plan	12	10					
2	State what you will do in the given situation (Assesses adaptability and critical thinking skills, leadership, team skills)	12	10					

3	In how many different and creative way can you use _____ (Object) other than its primary use	8	10					
4	What solutions can you think of for _____ problem.	13	10					
	Total	**45**	**60**					

Note: The marks that are awarded for the student for 40 to be increased proportionally for 60.

LEARNING OUTCOMES

1. **Attitude Matters :**
   - 1.1 Understand the importance of positive attitude and the consequences of negative attitude.
   - 1.2 Demonstrate positive attitude in dealing with work-related issues and in personal life.
2. **Adaptability….makes life easy :**
   - 2.1 Understand the significance of adaptability.
   - 2.2 Show adaptability whenever needed, both at place of work and on personal front.
3. **Goal Setting … life without a Goal is a rudderless boat!**
   - 3.2 Understand the SMART features of goal-setting.
   - **3.3** State one's short-term and long-term goals and spell out plans to achieve them.
4. **Motivation … triggers success!**
   - 4.2 Comprehend the need for motivation in order to achieve success in life.
   - 4.3 State how one is motivated in life.
   - 4.4 Show the impact of motivation on one's life
5. **Time Management… the need of the Hour!**
   - 5.2 Understand the value of time management and prioritizing in life
   - 5.3 Demonstrate the effect of time management on one's professional work.
6. **Critical Thinking … logic is the key!**
   - 6.1 Distinguish between facts and assumptions
   - 6.2 Use logical thinking in dealing with professional matters
7. **Creativity … the essential you!**
   - 7.2 Understand the importance of thinking out of the box in dealing with critical issues
   - 7.3 Solve problems using creativity / imagination
8. **Problem Solving … there is always a way out!**
   - 8.2 Understand the need for and importance of problem solving.
   - 8.3 Use logic or creativity to solve a problem at workplace or home.
9. **Team Work… together we are better!**
   - 9.1 Understand the need for team skills / team building
   - 9.2 Demonstrate one's skills as a team player
10. **Leadership… the meaning of a leading!**
    - 10.1 Understand the need for team skills / team building
    - 10.2 Demonstrate one's skills as a team player
11. **Stress Management… live life to the full!**
    - 11.1 Understand what causes stress and how to cope with stress at workplace.
    - 11.2 Demonstrate how stress can be overcome in a healthy way.

CONSTRUCTION PRACTICE LAB (C-20)

Course Title : Construction Practice Lab
Course Code : AA-609
Periods / Week : 03
Periods /Semester : 45

CO No	Topic	Course Outcomes
CO 1	AA-609.1	Testing the building materials
CO 2	AA-609.2	Know the fabrication of reinforcement in RCC
CO 3	AA-609.3	Know laying methods of various floorings.
CO 4	AA-609.4,5 & 6	Understand installation of plumbing, house wiring and air conditioning systems and fixtures in a building.

CONSTRUCTION PRACTICE LAB		
Course Objectives	(i)	To know the strength of various building materials.
	(ii)	To understand laying of reinforcement in RCC works and floorings in a building.
	(iii)	To understand plumbing, house wiring and air conditioning in a building.
Course Outcomes	CO1	Testing the building materials
	CO2	Know the fabrication of reinforcement in RCC
	CO3	Know laying methods of various floorings.
	CO4	Understand installation of plumbing, house wiring and air conditioning systems and fixtures in a building.

TIME SCHEDULE

Sl. No	Major Topics	No. of periods
1.	Tests on Building Materials	15
2.	R.C.C. Models	12
3.	Floor Finishes	04
4.	Plumbing	05
5.	House Wiring	05
6.	Air conditioning	04
	Total:	**45**

LEARNING OUTCOMES

Upon the completion of the Course the student will be able to

1.0 Tests on Building Materials

1.1 Test the quality of building materials like cement, sand and Hand broken granite chips

steel concrete bricks.

2.0 R.C.C. Models

2.1 Demonstrate fabrication of reinforcement and testing of RCC elements.

3.0 Floor Finishes

3.1 Demonstrate and explain various floor finishes and their uses and laying methods.

4.0 Plumbing

4.1 Explain and demonstrate various sizes of pipes, their joinery and laying methods and installation of various sanitary ware required for a residence.

5.0 House Wiring

5.1 Demonstrate various wiring systems and materials and installations.

6.0 Air conditioning

6.1 Demonstrate various components of Air conditioning systems, like window unit, split unit and package unit.

COURSE CONTENTS:

1.0 Tests on Building Materials

Tests on locally available bricks, fineness modulus of fine aggregate and coarse aggregate, tensile strength of steel, compressive strength of concrete and bricks.

2.0 R.C.C. Models

Workability of concrete, curing of concrete in various grades (such as M10, M15, M20, M25).

3.0 Floor Finishes

Demonstration of laying methods of various floor finishes like, ceramic tiles, vitrified tiles, also latest artificial tiles imitating natural tiles type, Natural stone slabs (marble, granite and latest flooring material of natural), wooden flooring.

4.0 Plumbing

Demonstration of water supply system of laying and joining of G.I, P.V.C & CPVC (Chlorinated Poly Vinyl Chloride pipes) pipes for– their joinery method and their laying methods – G.I. and PVC pipes for sanitary works, their joinery and laying methods – sanitary arrangements like Indian W.C. & European W.C., wash basin, Bath tub, floor traps, flushing appliances, taps.

5.0 House Wiring

Demonstration of Electrical Wiring-serial and parallel wiring, one way and two way connections.

6.0 Air conditioning

Demonstration and functioning of window air conditioner unit, split unit and package unit.

NOTE: A laboratory is to be erected and equipped for conducting the following Practicals and demonstration.

1. Apparatus for testing – Cement, sand, coarse aggregate.
2. Equipment and machines for testing tensile and compressive strengths for steel and concrete.

3. Samples of various floor finishes and other building materials.
4. Pipes and joinery of PVC and GI and water supply fixtures like, valves, pillar cocks, stop cocks, hot and cold water, mixer unit, Telephone shower, shower.
5. Pipes and joinery of PVC and sanitary ware like wash basin, Indian water closet, European water closer, Angles Indian water closet, bidet pans for male, squatting type urinal plan for female, bath tubs.
6. Equipment for wiring.

- **Internal Exam 40 Marks**
- **External exam 10 Marks Remembering+20 Marks Understanding + 30 Marks Practical**

Format for Blue Print of a question paper

Sl.no	Chapter name	Periods allocated	Weightage allocated	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Tests on Building Materials	15	5	**5**	**5**	**2**	**3**	**1**	**2**	**2**	**-**
2	RCC Models	12	10	**2**	**5**	**2**	**3**	**2**	**4**	**4**	**-**
3	Floor Finishes	04	5	**2**	**1**	**1**	**-**	**1**	**2**	**2**	**-**
4	Plumbing	05	10	**2**	**3**	**-**	**-**	**2**	**3**	**5**	**-**
5	House wiring	05	10	**2**	**3**	**-**		**2**	**3**	**5**	
6	Air Conditioning	04		**2**	**2**						
Internal Marks 40 Marks			40								
End Exam for 60 Marks								**10**	**20**	**30**	

R-remember
U-Understanding
Ap-Application
An-Analyzing

PROJECT WORK (C20)

Course Title : Project Work
Course Code : AA- 610
Periods Per Week : 06
Periods/ Semester : 90

CO No	Topic	Course Outcomes
CO1	AA-610.1, 2	Select a topic for project and accordingly collect data and explore it online.
CO2	AA-610.3 & 4	Study an existing project as a case study, draw inferences and prepare critical appraisal and present it for judging.
CO3	AA-610.4, 5, 6, 7 & 8	Create concepts and prepare schematic drawings.
CO4	AA-610.5, 6, 7 & 8	Prepare all required drawings, report and model of the project

Course Title: PROJECT WORK		
Course Objectives	(i)	To study an existing project and explore data before designing the proposed project
	(ii)	To design a project right from schematic to the final drawings
	(iii)	To boost the confidence of the student to handle any project individually.
Course Outcomes	CO1	Select a topic for project and accordingly collect data and explore it online.
	CO2	Study an existing project as a case study, draw inferences and prepare critical appraisal and present it for judging.
	CO3	Create concepts and prepare schematic drawings.
	CO4	Prepare all required drawings, report and model of the project

TIME SCHEDULE

Sl. No	Major Topics	No. of periods	Weightage of Marks.	
			Sessional	External
1.	Selection of Topic	03	-	-
2.	Data collection and Review	06	1	3
3.	Case study and Analysis	09	5	9
4.	Flow charts & Schematic Proposals	06	2	3
5.	Detailed Drawings	36	14	21
6.	Presentation Drawings & Models	18	8	9
7	Structural Drawings and estimation	06	4	6
8.	Report	06	4	6
	Communication & Presentation skills	--	2	3
	Total:	**90**	**40**	**60**

Learning outcomes:

Upon completion of the Course the student should be able to understand and acquire knowledge and have confidence by doing the project work in all respects as mentioned through course contents and able to do a project individually / in group.

1.0 Selection of Topic:

1.1 Select a topic and to submit a report containing synopsis containing (i) Aim, (ii) Objectives, (iii) Scope and (iv) Limitations & (v) Outcomes

2.0 Data Collection and Review:

2.1 Collect data pertaining to the topic from relevant books and prepare a report.

3.0 Case study and Analysis

3.1 Select an existing project of the topic and do the case study

3.2 Analyse the data collected from books, case study and to critical appraisal and inferences.

4.0Flow charts and Schematic Proposals

4.1 Prepare Flow charts and Schematic Proposals of the selected project.

5.0 Detailed drawings

Prepare Working / Detailed / Construction drawings of

5.1 All Plans comprising all floors and buildings

5.2 All Electrical Wiring and Fixture comprising of all floors and buildings

5.3 All Sections comprising all floors and buildings

5.4 All Elevations comprising all floors and buildings

5.5 All buildings along with Hard and soft Landscape elements

5.6 Water supply t along with source (public water supply) and distribution (to the wet areas such as toilets, kitchen, wash, laundry, etc.,).

5.7 Sanitary plans along with source (form the building) and disposal (to the public sewer) to the required areas.

6.0 Presentation Drawings & Models

Prepare presentation drawings of

6.1Plans of all floors / buildings and site

6.2 Elevations of all buildings

6.3 3Ds, Walk-throughs, Videos of the proposed project.

6.4 Physical Model in any media of material(s)

7.0 Structural Drawings and estimation

7.1 Prepare Structural Drawings: comprising for a small building/portion of a building with in the premises of the project.

7.2 Prepare Estimation: comprising for the Project cost (on the basis of primary estimation i.e., rate per square meter area of buildings 1and also for site development.

7.3 Prepare Areas statement of proposed project

8.0 Report:

8.1 Prepare a detailed report on the project comprising selection of topic, aim, objects, concepts, case study and include all the drawings of theproject

COURSES CONTENTS:

1.0 Selection of Topic: The topic should be selected from the syllabus only and submit a report containing synopsis containing (i) Aim, (ii) Objectives, (iii) Scope and (iv) Limitations & (v) Outcomes

2.0 Data Collection and Review:

Data pertaining to the topic to be collected from relevant books and prepare a report. There should be a review on the collected data by the internal guides (faculty) entrusted for each batch of students. (Data comprising the (a) Requirements (or) components (or) functional spaces, (b) Standards, (c) Write up reports regarding the standards arrived through the standards books, (d) Municipal bye-laws, (f) Any relevant material from departments, organizations, firms, voluntary organizations.

3.0 Case study and Analysis

Each Group is required to select the case [(i) One case from the Existing project and (ii) Second case from Exploring through internet of existing case only with all details] and study them as per 'case study modalities' mentioned above and prepare report as specified.

Each student has to analyse by considering the data collected from books, existing case and explored case and prepare a report on conclusions in the excel format as specified below.

4.0 Flow charts and Schematic Proposals

Prepare Flow charts and Schematic Proposals considering the conclusions and a review to be conducted by the faculty.

5.0 Detailed Drawings

All Plans comprising all floors and buildings-all Electrical Wiring and Fixture comprising of all floors and buildings-all Sections comprising all floors and buildings-all Elevations comprising all floors and buildings-all buildings along with Hard and soft Landscape elements- Water supply t along with source (public water supply) and distribution (to the wet areas such as toilets, kitchen, wash, laundry, etc.)- Sanitary plans along with source (form the building) and disposal (to the public sewer) to the required areas.

6.0 Presentation Drawings & Models

Plans of all floors / buildings and site- Elevations of all buildings- 3Ds, Walk-throughs, Videos of the proposed project- Physical Model in any media of material(s)

7.0 Structural Drawings and estimation

Structural Drawings: comprising for a small building/portion of a building with in the premises of the project- Prepare Estimation: comprising for the Project cost (on the basis of primary estimation i.e., rate per square meter area of buildings 1and also for site development- Prepare Areas statement of proposed project

8.0 Report:

Detailed report on the project comprising selection of topic, aim,objects, concepts, case study and include all the drawings of the project

Modalities for conduct of case studies

1. The batch of students have to seek written permission /recommendation from Course teacher, HoD and Principal of the institution on a letterhead addressing the concerned project authorities.
2. Total strength of the class to be divided into batches not less than 3 and not more than 7
3. The case studies selected for the project can be one or two.
4. The batches to be guided by the Course teacher in the method of studying the Project

so that each batch of students have to be entrusted one of the following tasks of study: - (i) study the site, (ii) plan of the building, (iii) elevations of the building (iv) interiors of all functional areas of the building provided for such case.

5. A comprehensive report of the case study entrusted by each batch is to be prepared and presented in form of sketches, drawings, photographs and write-ups.
6. For said case-study maximum 10 marks to be allotted out of internal marks of 40.
7. The risk factors to be taken care by the students themselves, the institution is not responsible for any untoward incidents, damages thereafter.
8. Before seeking the permission for case study, the students must have to submit the duly filled indemnity bond.

INTERNAL REVIEWS PROCEDURE:

1. At every schedule of the project work one review to be done by the guide allotted for the batch of students and award the marks as per the norms of internal assessment procedure.
2. After the above guide's review, the batch has to be given two days to rectify the suggestions given by the guide.
3. After the corrections and rectifications done by the batch as suggested by their guide the same has to be evaluated by the other guide and award the marks as per the norms of internal assessment procedure.

EXTERNAL EXAMINATION (Viva-voce) PROCEDURE:

[Note: Viva-voce is an oral exam / test is a practice in which an external examiner along with an internal examiner (guide) poses questions to the student in spoken form and finally the external examiner has to award the marks as per the norms specified. The student has to answer the question in such a way as to demonstrate sufficient knowledge of the Course to pass the exam]

1. An external examiner Practicing Architect having qualification of Bachelor of Architecture being registered in the Council of Architecture and his registration to be active.

(OR)

2. The architecture faculty who is in teaching profession either from a Polytechnic or from any Bachelor of Architecture Institution.
3. The Expenses of travelling, lodging and boarding along with dearness allowance for external examiner who attends from other than headquarters (institution town) has to be paid by the institution from the SBTET examination funds.

Norms for Internal evaluation and External evaluation including Viva-voce Marks:

Sl. No.	Scheduled Date and Time	Task / Scheduled work(s)	Internal Evaluation Marks		External Evaluation Marks	
			Maximum 40 Marks		Maximum 60 Marks	
			Guide Review	Other Guide Review	External Examiner Observations	Viva-voce
(A)	(B)	(C)	(D)	(E)	(F)	(G)
1		Data Collection	0.5	0.5	2	1
		Review-I Marks	0.5	0.5		
2		Case Study-i	1	1	2	1
3		Case Study-ii	0.5	0.5	2	1
4		Analysis and Inferences comprising the qualitative (regarding planning, form, elevation, etc.) and quantitative (regarding areas and measurements etc.)	1	1	2	1
		Review-II Marks	2.5	2.5		
5		Flow charts (comprising (i) flow into the site in-turn to each block or building and (ii) flow with in each building of all floors.)	1	1	2	1
		Review-III Marks	1	1		
6		Working / Detailed / Construction drawings of all Plans comprising all floors and buildings	1	1	2	1
7		Working / Detailed / Construction drawings of Electrical Wiring and Fixture comprising of all floors and buildings	1	1	2	1
		Review-IV Marks	2	2		
8		Working / Detailed / Construction drawings of all Sections comprising all floors and buildings	1	1	2	1
		Review-V Marks	1	1		
9		Working / Detailed / Construction drawings of all Elevations comprising all floors and buildings	1	1	2	1
		Review-VI Marks	1	1		
10		Working / Detailed / Construction drawings of Site comprising all buildings along with Hard and soft Landscape elements	1	1	2	1
		Review-VII Marks	1	1		
11		Working / Detailed / Construction	1	1	2	1

		drawings of Water supply of all buildings along with source (public water supply) and distribution (to the wet areas such as toilets, kitchen, wash, laundry, etc.,).				
		Review-VIII Marks	1	1		
12		Working / Detailed / Construction drawings of Sanitary plans of all buildings along with source (form the building) and disposal (to the public sewer) to the required areas.	1	1	2	1
		Review-IX Marks	1	1		
13		Presentation drawings of Plans of all floors / buildings and site	1	1	2	1
14		Presentation drawings of Elevations of all buildings	1	1	2	1
		Review-X Marks	**2**	**2**		
15		3Ds, Walk-throughs, Videos of the proposed project.	1	1	1	1
16		Physical Model in any media of material(s)	1	1	1	
		Review-XI Marks	**2**	**2**		
17		Written report relevant to the proposed project.	1	1	2	1
18		Areas statement of proposed project	1	1	2	1
19		Estimation: comprising for the Project cost (on the basis of primary estimation i.e., rate per square meter area of buildings 1and also for site development.	1	1	2	1
		Review-XII Marks	**3**	**3**		
20		Structural Drawings: comprising for a small building/portion of a building with in the premises of the project.	1	1	2	1
21		Personal abilities and efficiencies (pertaining to individual): comprising presentation, explanation, language command, fluency, familiarity of the project discipline, appearance, in attending for review	1	1	2	1
		Review-XIII Marks	**2**	**2**		
22		Totals of each Column	20	20	40	20
23		Internal & External Marks	40		60	
24		GRAND TOTAL MARKS	100			

AA-610 PROJECT WORK
C-20

- **Internal Exam 40 Marks**
- **External exam 10 Marks Remembering+20 Marks Understanding + 30 Marks Practical**

Format for Blue Print for assessment of student's performance

Sl.no	Chapter name	Periods allocated	Weightage allocated (Internal + External)	Period wise distribution of weightage				Marks wise distribution of weightage			
				R	**U**	**Ap**	**An**	**R**	**U**	**Ap**	**An**
1	Selection of topic	3	--		**2**	**1**					
2	Data collection and review	6	1+3		**2**	**2**	**2**		**4**		
3	Case study and analysis	9	5+9		**3**	**3**	**3**		**2**	**3**	**9**
4	Flow charts & schematic proposals	6	2+3		**-**	**6**	**-**			**5**	
5	Detailed drawings	36	14+21		**-**	**36**	**-**			**35**	
6	Presentation drawings and models	18	8+9		**-**	**18**	**-**			**17**	
7	Structural Drawings and estimation	6	4+6		**-**	**3**	**3**			**10**	
8	Report	6	4+6		**-**	**-**	**6**				**10**
	Communication & Presentation Skills	-	2+3					**1**	**1**	**1**	**2**
	Totals	90	40+60 marks								

R-remember
U-Understanding
Ap-Application
An-Analyzing