ACADEMIC REGULATIONS
COURSE STRUCTURE AND DETAILED SYLLABUS
FOR
CIVIL ENGINEERING
For B.TECH. FOUR YEAR DEGREE COURSE
(Applicable for the batches admitted from 2012-2013)
REGULATION : R12

J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(Autonomous)
Yenkapally, Moinabad Mandal, P.O.Himayath Nagar, R.R.Dist, Hyderabad-500 075
Fax&Phone No.910-8413-235753, Tel:08413-235755,201301
Website:www.jbiet.edu.in ; e-mail:principal@jbiet.edu.in
1. **Award of B.Tech. Degree**
   A student will be declared eligible for the award of the B. Tech. Degree if he fulfils the following academic regulations:
   i. **Pursued a course of study for not less than four academic years and not more than eight academic years.**
   ii. **Register for 200 credits and secure 200 credits**

2. Students, who fail to fulfill all the academic requirements for the award of the degree within eight academic years from the year of their admission, shall forfeit their seat in B.Tech course.

3. **Courses of study**
   The following courses of study are offered at present for specialization for the B. Tech. Course:

<table>
<thead>
<tr>
<th>Branch Code</th>
<th>Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>02</td>
<td>Electrical and Electronics Engineering</td>
</tr>
<tr>
<td>03</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>04</td>
<td>Electronics and Communication Engineering.</td>
</tr>
<tr>
<td>05</td>
<td>Computer Science and Engineering</td>
</tr>
<tr>
<td>11</td>
<td>Bio-Medical Engineering</td>
</tr>
<tr>
<td>12</td>
<td>Information Technology</td>
</tr>
<tr>
<td>25</td>
<td>Mining Engineering</td>
</tr>
</tbody>
</table>

   and any other course as approved by the authorities of the JBIET from time to time.

4. **Credits**

<table>
<thead>
<tr>
<th></th>
<th>I Year</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Periods / Week</td>
<td>Credit</td>
</tr>
<tr>
<td>Theory</td>
<td>03</td>
<td>06</td>
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<td></td>
<td>02</td>
<td>04</td>
</tr>
<tr>
<td>Practical</td>
<td>03</td>
<td>04</td>
</tr>
<tr>
<td>Drawing</td>
<td>02T/03D</td>
<td>04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mini Project</td>
<td>--</td>
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</tr>
<tr>
<td>Comprehensivve Viva Voce</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Seminar</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Project</td>
<td>--</td>
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</tr>
</tbody>
</table>
5. Distribution and Weightage of Marks

i. The performance of a student in each semester / I year shall be evaluated subject-wise with a maximum of 100 marks for theory and 75 marks for practical subject. In addition, Industry oriented mini-project, seminar and project work shall be evaluated for 50, 50 and 200 marks respectively.

ii. For theory subjects the distribution shall be 25 marks for Internal Evaluation and 75 marks for the End-Examination.

iii. For the subject having design and / or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 25 marks for internal evaluation (15 marks for day-to-day work and 10 marks for subjective paper) and 75 marks for end examination. There shall be two internal tests in a Semester.

For theory subjects, the distribution shall be 25 marks for internal evaluation (Midterm exams (20 marks) + Assignment (5 marks)) and 75 marks for end examination. There shall be altogether four assignments (Each assignment consisting of 6 questions from every two units of syllabus)set by the teacher from the whole syllabus of the subject

The pattern of question paper shall consist of two parts namely Part-A and Part-B out of which the candidate has to answer Part-A compulsorily and from Part-B, the candidate has to answer three questions out of five questions given. The Part-A i.e. question no.1 consists of sub questions, which are based on fundamentals and concept testing nature. These questions may of the following type:

a. Short answer questions for which answer is two to three sentences
b. Multiple choice questions
c. Fill in the blanks
d. True/False type

Any sub question may carry a maximum of 1 or 2 marks. Altogether candidate has to answer 4 questions out of 6 questions but question no.1 of Part-A is compulsory. The time allocated for the mid term examination is 2 hours. There shall be 2 Mid Term Examinations (1st Mid shall be from 1-4 Units and 2nd Mid shall be from 5-8 Units)

The Internal Evaluation is for 25 marks (20 for Mid term Examination and 5 Marks for Assignment), the average of these two shall be considered as the final marks for Internal Evaluation secured by the candidate.

However, for first year, there shall be 3 mid term examinations (Each for 20 Marks) and 3 Assignments (Each for 5 Marks) , [1st mid shall be from 1-2 units, 2nd mid from 3-5 units and 3rd mid shall be from 6-8 units]. There shall be altogether six assignments (Each assignment consisting of 6 questions from every unit of syllabus)set by the teacher from the whole syllabus of the subject.

The Internal Evaluation is for 25 marks (20 for Mid term Examination and 5 Marks for Assignment), the average of these three shall be considered as the final marks for Internal Evaluation secured by the candidate.

The question paper shall contain 6 questions, 1 in Part-A and 5 in Part-B. The candidate shall have to answer Part-A compulsorily and shall have to answer any three questions from remaining five questions of Part-B. The Part-A i.e. question no.1 consists of sub questions, which are based on fundamentals and concept testing nature. These questions may of the following type:
a. Short answer questions for which answer is two to three sentences
b. Multiple choice questions
c. Fill in the blanks
d. True/False type

Any sub question may carry a maximum of 1 or 2 marks. Altogether candidate has to answer 4 questions out of 6 questions.

iv. For practical subjects there shall be a continuous evaluation during the semester for 25 sessional marks and 50 end examination marks. Out of the 25 marks for internal, day-to-day work in the laboratory shall be evaluated for 15 marks and internal examination for practical shall be evaluated for 10 marks conducted by the concerned laboratory teacher. The end examination shall be conducted with external examiner and laboratory teacher. The external examiner shall be appointed by the Chief Controller of Examinations.

v. For the subject having design and / or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing) and estimation, the distribution shall be 25 marks for internal evaluation (15 marks for day-to-day work and 10 marks for subjective paper) and 75 marks for end examination. There shall be two internal tests in a Semester and average of the two shall be considered for the award of marks for internal tests. However in the I year class, there shall be three tests and the average of the three mid term examinations will be taken into consideration.

vi. There shall be an industry-oriented mini-Project, in collaboration with an industry of their specialization, to be taken up during the vacation after III year II Semester examination. However, the mini project and its report shall be evaluated with the project work in IV year II Semester. The industry oriented mini project shall be submitted in report form and should be presented before the committee, which shall be evaluated for 50 marks. The committee consists of an external examiner, head of the department, the supervisor of mini project and a senior faculty member of the department. There shall be no internal marks for industry oriented mini project.

vii. There shall be a seminar presentation in IV year II Semester. For the seminar, the student shall collect the information on a specialized topic and prepare a technical report, showing his understanding over the topic, and submit to the department, which shall be evaluated by the Departmental committee consisting of Head of the department, seminar supervisor and a senior faculty member. The seminar report shall be evaluated for 50 marks. There shall be no external examination for seminar.

viii. There shall be a Comprehensive Viva-Voce in IV year II semester. The Comprehensive Viva-Voce will be conducted by a Committee consisting of (i) Head of the Department (ii) two Senior Faculty members of the Department. The Comprehensive Viva-Voce is aimed to assess the students’ understanding in various subjects he / she studied during the B.Tech course of study. The Comprehensive Viva-Voce is evaluated for 100 marks by the Committee. There are no internal marks for the Comprehensive viva-voce.

ix. Out of a total of 200 marks for the project work, 50 marks shall be for Internal Evaluation and 150 marks for the End Semester Examination. The End Semester Examination (viva-voce) shall be conducted by the same committee appointed for industry oriented mini project. In addition the project supervisor shall also be included in the committee. The topics for industry oriented mini project, seminar and project work shall be different from each other. The evaluation of project work shall be conducted at the end of the IV year. The Internal Evaluation shall be on the basis of two seminars given by each student on the topic of his project.
6. Attendance Requirements:
   i. A student shall be eligible to appear for College End examinations if he acquires a minimum of 75% of attendance in aggregate of all the subjects.
   ii. Shortage of Attendance below 65% in aggregate shall in NO case be condoned.
   iii. Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or I year may be granted by the College Academic Committee.
   iv. A student will not be promoted to the next semester unless he satisfies the attendance requirement of the present semester / I year, as applicable. They may seek re-admission for that semester / I year when offered next.
   v. Students whose shortage of attendance is not condoned in any semester / I year are not eligible to take their end examination of that class and their registration shall stand cancelled.
   vi. A stipulated fee shall be payable towards condonation of shortage of attendance.

7. Minimum Academic Requirements:
The following academic requirements have to be satisfied in addition to the attendance requirements mentioned in item no.6
   i. A student shall be deemed to have satisfied the minimum academic requirements and earned the credits allotted to each theory or practical design or drawing subject or project if he secures not less than 35% of marks in the end examination and a minimum of 40% of marks in the sum total of the internal evaluation and end examination taken together.
   ii. A student shall be promoted from II to III year only if he fulfils the academic requirement of 37 credits from one regular and one supplementary examinations of I year, and one regular examination of II year I semester irrespective of whether the candidate takes the examination or not.
   iii. A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of total 62 credits from the following examinations, whether the candidate takes the examinations or not.
      a. Two regular and two supplementary examinations of I year.
      b. Two regular and one supplementary examinations of II year I semester.
      c. One regular and one supplementary examinations of II year II semester.
      d. One regular examination of III year I semester.
   iv. A student shall register and put up minimum attendance in all 200 credits and earn the 200 credits. Marks obtained in all 200 credits shall be considered for the calculation of percentage of marks.
   v. Students who fail to earn 200 credits as indicated in the course structure within eight academic years from the year of their admission shall forfeit their seat in B.Tech course and their admission shall stand cancelled.

8. Course pattern:
   i. The entire course of study is of four academic years. The first year shall be on yearly pattern and the second, third and fourth years on semester pattern.
   ii. A student eligible to appear for the end examination in a subject, but absent at it or has failed in the end examination may appear for that subject at the supplementary examination.
   iii. When a student is detained due to lack of credits / shortage of attendance he may be re-admitted when the semester/ year is offered after fulfilment of academic regulations, whereas the academic regulations hold good with the regulations he was first admitted.
9. **Award of Class:**

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

<table>
<thead>
<tr>
<th>Class Awarded</th>
<th>% of marks to be secured</th>
<th>From the aggregate marks secured for the best 200 Credits.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class with Distinction</td>
<td>70% and above</td>
<td></td>
</tr>
<tr>
<td>First Class</td>
<td>Below 70% but not less than 60%</td>
<td></td>
</tr>
<tr>
<td>Second Class</td>
<td>Below 60% but not less than 50%</td>
<td></td>
</tr>
<tr>
<td>Pass Class</td>
<td>Below 50% but not less than 40%</td>
<td></td>
</tr>
</tbody>
</table>

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

10. **Minimum Instruction Days:**

The minimum instruction days for each semester / I year shall be 90/180 clear instruction days.

11. There shall be no branch transfers after the completion of admission process.

12. **General:**

i. Where the words “he”, “him”, “his”, occur in the regulations, they include “she”, “her”, “hers”.

ii. The academic regulation should be read as a whole for the purpose of any interpretation.

iii. In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the JBIET is final.

iv. The JBIET may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the JBIET.

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Academic Regulations for B. Tech. (Lateral Entry Scheme)
(Effective for the students getting admitted into II year from the Academic Year 2011-2012 and onwards)

1. The Students have to acquire 150 credits from II to IV year of B.Tech. Program (Regular) for the award of the degree.
   Register for 150 credits and secure 150 credits.

2. Students, who fail to fulfil the requirement for the award of the degree in 6 consecutive academic years from the year of admission, shall forfeit their seat.

3. The same attendance regulations are to be adopted as that of B. Tech. (Regular).

4. Promotion Rule:
   A student shall be promoted from third year to fourth year only if he fulfils the academic requirements of 37 credits from the examinations.
   a. Two regular and one supplementary examinations of II year I semester.
   b. One regular and one supplementary examinations of II year II semester.
   c. One regular examination of III year I semester.

5. Award of Class:
   After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. Degree he shall be placed in one of the following four classes:

<table>
<thead>
<tr>
<th>Class</th>
<th>Percentage Range</th>
<th>From the aggregate marks secured for 150 Credits (i.e. II year to IV year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Class with Distinction</td>
<td>70% and above</td>
<td></td>
</tr>
<tr>
<td>First Class</td>
<td>Below 70% but not less than 60%</td>
<td></td>
</tr>
<tr>
<td>Second Class</td>
<td>Below 60% but not less than 50%</td>
<td></td>
</tr>
<tr>
<td>Pass Class</td>
<td>Below 50% but not less than 40%</td>
<td></td>
</tr>
</tbody>
</table>

(The marks in internal evaluation and end examination shall be shown separately in the marks memorandum)

6. All other regulations as applicable for B. Tech. Four-year degree course (Regular) will hold good for B. Tech. (Lateral Entry Scheme)
### MALPRACTICES RULES

#### DISCIPLINARY ACTION FOR / IMPROPER CONDUCT IN EXAMINATIONS

<table>
<thead>
<tr>
<th>Nature of Malpractices/Improper conduct</th>
<th>Punishment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>If the candidate:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1. (a)</strong> Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)</td>
<td>Expulsion from the examination hall and cancellation of the performance in that subject only.</td>
</tr>
<tr>
<td><strong>(b)</strong> Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.</td>
<td>Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.</td>
</tr>
<tr>
<td><strong>2.</strong> Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.</td>
<td>Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.</td>
</tr>
<tr>
<td><strong>3.</strong> Impersonates any other candidate in connection with the examination.</td>
<td>The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.</td>
</tr>
</tbody>
</table>
| **4.** Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination. | Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that }
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td>Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.</td>
<td>Cancellation of the performance in that subject.</td>
</tr>
<tr>
<td>6.</td>
<td>Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in-charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.</td>
<td>In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.</td>
</tr>
<tr>
<td>7.</td>
<td>Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.</td>
<td>Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.</td>
</tr>
<tr>
<td>8.</td>
<td>Possess any lethal weapon or firearm in the examination hall.</td>
<td>Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.</td>
</tr>
<tr>
<td>9.</td>
<td>If student of the college, who is not a candidate</td>
<td>Student of the colleges expulsion from the</td>
</tr>
<tr>
<td>10.</td>
<td>Comes in a drunken condition to the examination hall.</td>
<td>Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. Person(s) who do not belong to the College will be handed over to police and a police case will be registered against them.</td>
</tr>
<tr>
<td>11.</td>
<td>Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.</td>
<td>Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.</td>
</tr>
<tr>
<td>12.</td>
<td>If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.</td>
<td></td>
</tr>
</tbody>
</table>

### Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.
2. Punishment for institutions: (if the squad reports that the college is also involved in encouraging malpractices)
   (i) A show cause notice shall be issued to the college.
   (ii) Impose a suitable fine on the college.
   (iii) Shifting the examination centre from the college to another college for a specific period of not less than one year.
# J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
B.TECH CIVIL ENGINEERING

## COURSE STRUCTURE

### I YEAR

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>L</th>
<th>T/P/D</th>
<th>C</th>
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<tbody>
<tr>
<td>6751001</td>
<td>English</td>
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<td>4</td>
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<tr>
<td>6751002</td>
<td>Mathematics-I</td>
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<td>1</td>
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<tr>
<td>6751003</td>
<td>Engineering Mechanics</td>
<td>3</td>
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<tr>
<td>6751004</td>
<td>Engineering Physics</td>
<td>2</td>
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<tr>
<td>6751005</td>
<td>Engineering Chemistry</td>
<td>2</td>
<td>-</td>
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<tr>
<td>6751006</td>
<td>Computer Programming &amp; Data Structures</td>
<td>3</td>
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<tr>
<td>6751007</td>
<td>Engineering Drawing</td>
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<tr>
<td>6751600</td>
<td>Computer Programming Lab.</td>
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<tr>
<td>6751601</td>
<td>Engineering Physics &amp; Engineering Chemistry Lab.</td>
<td>-</td>
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<tr>
<td>6751602</td>
<td>English Language Communication Skills Lab.</td>
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<tr>
<td>6751611</td>
<td>Engineering Workshop/IT Workshop</td>
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<td><strong>Total</strong></td>
<td></td>
<td><strong>17</strong></td>
<td><strong>18</strong></td>
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### II YEAR I SEMESTER

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<td>Mathematics-II</td>
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<td>6753015</td>
<td>Electrical &amp; Electronics Engineering</td>
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<tr>
<td>6753003</td>
<td>Strength of Materials-I</td>
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<td>6753004</td>
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<td>6753005</td>
<td>Fluid Mechanics</td>
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<td>6753006</td>
<td>Managerial Economics &amp; Financial Analysis</td>
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<td>Surveying Lab-I</td>
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<td>Strength of Materials Lab</td>
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<td><strong>Total</strong></td>
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<td><strong>11</strong></td>
<td><strong>25</strong></td>
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### II YEAR II SEMESTER

<table>
<thead>
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<th>Subject</th>
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<th>C</th>
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</thead>
<tbody>
<tr>
<td>6754001</td>
<td>Probability &amp; Statistics</td>
<td>3</td>
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</tr>
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<td>6754002</td>
<td>Strength of Materials-II</td>
<td>4</td>
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</tr>
<tr>
<td>6754003</td>
<td>Hydraulics &amp; Hydraulic Machinery</td>
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### III YEAR I SEMESTER

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### III YEAR II SEMESTER

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## IV YEAR II SEMESTER

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**Note:** All End Examinations (Theory and Practical) are of three hours duration.

T-Tutorial L – Theory P/D – Practical/Drawing C – Credits
1. INTRODUCTION:
In view of the growing importance of English as a tool for global communication and the consequent emphasis on training students to acquire communicative competence, the syllabus has been designed to develop linguistic and communicative competence of Engineering students. The prescribed books and the exercises are meant to serve broadly as students’ handbooks. In the English classes, the focus should be on the skills of reading, writing, listening and speaking and for this the teachers should use the text prescribed for detailed study. For example, the students should be encouraged to read the texts/selected paragraphs silently. The teachers can ask comprehension questions to stimulate discussion and based on the discussions students can be made to write short paragraphs/essays etc.
The text for non-detailed study is for extensive reading/reading for pleasure by the students. Hence, it is suggested that they read them on their own with topics selected for discussion in the class. The time should be utilized for working out the exercises given after each section, as also for supplementing the exercises with authentic materials of a similar kind for example, from newspaper articles, advertisements, promotional material etc. However, the stress in this syllabus is on skill development and practice of language skills.

2. OBJECTIVES:
a. To improve the language proficiency of the students in English with emphasis on LSRW skills.
b. To equip the students to study academic subjects with greater facility through the theoretical and practical components of the English syllabus.
c. To develop the study skills and communication skills in formal and informal situations.

3. SYLLABUS:
Listening Skills:
Objectives
1. To enable students to develop their listening skill so that they may appreciate its role in the LSRW skills approach to language and improve their pronunciation
2. To equip students with necessary training in listening so that can comprehend the speech of people of different backgrounds and regions

Students should be given practice in listening to the sounds of the language to be able to recognise them, to distinguish between them to mark stress and recognise and use the right intonation in sentences.
• Listening for general content
• Listening to fill up information
• Intensive listening
• Listening for specific information

Speaking Skills:
Objectives
1. To make students aware of the role of speaking in English and its contribution to their success.
2. To enable students to express themselves fluently and appropriately in social and professional contexts.

• Oral practice
• Describing objects/situations/people
• Role play – Individual/Group activities (Using exercises from all the nine units of the prescribed text: Learning English : A Communicative Approach.)
• Just A Minute(JAM) Sessions.

Reading Skills:
Objectives
1. To develop an awareness in the students about the significance of silent reading and comprehension.
2. To develop the ability of students to guess the meanings of words from context and grasp the overall message of the text, draw inferences etc.

• Skimming the text
• Understanding the gist of an argument
• Identifying the topic sentence
• Inferring lexical and contextual meaning
• Understanding discourse features
• Recognizing coherence/sequencing of sentences

NOTE: The students will be trained in reading skills using the prescribed text for detailed study. They will be examined in reading and answering questions using ‘unseen’ passages which may be taken from the non-detailed text or other authentic texts, such as magazines/newspaper articles.

Writing Skills:
Objectives
1. To develop an awareness in the students about writing as an exact and formal skill
2. To equip them with the components of different forms of writing, beginning with the lower order ones.

• Writing sentences
• Use of appropriate vocabulary
• Paragraph writing
• Coherence and cohesiveness
• Narration / description
• Note Making
• Formal and informal letter writing
• Editing a passage

4. TEXTBOOKS PRESCRIBED:
In order to improve the proficiency of the student in the acquisition of the four skills mentioned above, the following texts and course content, divided into Eight Units, are prescribed:

For Detailed study
1. First Text book entitled “Enjoying Everyday English”, Published by Sangam Books, Hyderabad

For Non-detailed study
1. Second text book “Inspiring Speeches and Lives”, Published by Maruthi Publications, Guntur

A. STUDY MATERIAL:
UNIT-I
a. Sir C.V. Raman (Detail) A pathbreaker in the saga of Indian Science. (Detail)
b. Leading a team and Work brings Solace (from Wings of Fire)
   --University Press

UNIT-II
a. The Connoisseur (Detail)
b. Mother Theresa (Non-detail)

UNIT-III
a. Kalpana Chawla “Inspiration” (Detail)
b. Sam Pitroda (Non-detail)

UNIT-IV
a. Bubbling Well Road (Detail)
b. I have a dream-Martin Luther king(Non-detail)

UNIT-V
a. The Cuddalore Experience(Detail)
b. Amartya kumar Sen(Non-detail)

UNIT-VI
a. Youth, Awake, Arise- STOP NOT TILL
   Swami Vivekananda Institute of Human Excellence,
b. John F. Kennedy (Non-detail)

UNIT-VII
Exercises on;
Reading & Writing Skills
Reading Comprehension
Letter Writing
Essay Writing

UNIT-VIII
Exercises on Remedial Grammar;
Common errors in English
Subject-Verb agreement
Tense aspect
Vocabulary development-Synonyms, Antonyms, One word substitutes, Prefixes-Suffixes, Idioms, Phrases, Words often confused

REFERENCES :
1. Innovate with English: A Course in English for Engineering Students, edited by T Samson, Foundation Books
2. English Grammar Practice, Raj N Bakshi, Orient Longman.
3. Effective English, edited by E Suresh Kumar, A RamaKrishna Rao, P Sreehari, Published by Pearson
6. Technical Communication, Meenakshi Raman, Oxford University Press
7. Objective English Edgar Thorpe & Showick Thorpe, Pearson Education
9. Murphy’s English Grammar with CD, Murphy, Cambridge University Press.
10. Everyday Dialogues in English, Robert J. Dixon, Prentice Hall India Pvt Ltd.,
12. Basic Vocabulary Edgar Thorpe & Showick Thorpe, Pearson Education
16. Enrich your English, Thakur K B P Sinha, Vijay Nicole Imprints Pvt Ltd.,
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6751002

MATHEMATICS – I

UNIT-I : Sequences - Series
Basic definitions of Sequences and Series – Convergence and divergence – Ratio test – Comparison test – Integral test – Cauchy’s root test – Raabe’s test – Absolute and conditional convergence

UNIT-II : Differential equations of first order and their applications
Overview of differential equations – exact, linear and Bernoulli. Applications to Newton’s Law of cooling, Law natural growth and decay, orthogonal trajectories and geometrical applications.

UNIT-III : Higher Order Linear differential equations and their applications
Linear differential equations of second and higher order with constant coefficients, RHS term of the f(X)=e^{ax}, Cos ax, and x^n, e^{ax} V(x), x^n V(x) method of variation of parameters. Applications bending of beams, Electrical circuits, simple harmonic motion.

UNIT-IV : Laplace transform and its application to Ordinary differential equations

UNIT-V : Function of Single Variable
Rolle’s Theorem – Lagrange’s Mean Value Theorem – Cauchy’s mean value Theorem – Generalized mean value theorem (all theorems without proof) Functions of several variables – Functional dependence – Jacobian – Maxima and Minima of functions of two variables with constraints and without constraints.

UNIT-VI : Application of Single variable
Radius, Centre and Circle of Curvature-Evolutes and Envelopes Curve tracing – Cartesian, polar and parametric curves.

UNIT-VII : Integration & its applications
Riemann Sums, integral Representation for lengths, Areas, Volumes and Surface areas in Cartesian and polar coordinates, multiple integrals – double and triple integrals – change of order of integration – change of variable.

UNIT-VIII : Vector Calculus
Vector integrals theorem: Green’s –Stock’s and Gauss’s Divergence Theorems (Statement & their verification).

TEXT BOOKS:
1. Engineering Mathematics by B.V.Ramana
2. Engineering Mathematics-I by T.K.V. Iyanar & B.Krishna Gandhi & Others, S.Chand

REFERENCES:
UNIT – I
Introduction to Engineering. Mechanics – Basic Concepts.

UNIT – II

UNIT – III
Centroid: Centroids of simple figures (from basic principles) – Centroids of Composite Figures
Centre of Gravity: Centre of gravity of simple body (from basis principles), centre of gravity of composite bodies, pappus theorem.

UNIT – IV
Area moment of Inertia: Definition – Polar Moment of Inertia, Transfer Theorem, Moments of Inertia of Composite Figures, Products of Inertia, Transfer Formula for Product of Inertia.
Mass Moment of Inertia: Moment of Inertia of Masses, Transfer Formula for Mass Moments of Inertia, mass moment of inertia of composite bodies.

UNIT – V
Analysis of perfect frames (Analytical Method) – Types of Frames – Assumptions for forces in members of a perfect frame, Method of joints, Method of sections, Force table, Cantilever Trusses, Structures with one end hinged and the other freely supported on rollers carrying horizontal or inclined loads.

UNIT – VI
Kinematics: Rectilinear and Curvilinear motions – Velocity and Acceleration – Motion of Rigid Body – Types and their Analysis in Planar Motion.
Kinetics: Analysis as a Particle and Analysis as a Rigid Body in Translation – Central Force Motion – Equations of Plane Motion – Fixed Axis Rotation – Rolling Bodies.

UNIT – VII

UNIT – VIII
Principle of virtual work: Equilibrium of ideal systems, efficiency of simple machines, stable and unstable equilibriums

TEXT BOOKS:

REFERENCES:
ENGINEERING PHYSICS

Unit-I Physical Optics:
1. Interference: Types of Interferences, Interference in thin films (reflected light) - Newton's rings.
2. Diffraction: Types of diffraction, Frounhofer’s Diffraction at a single slit, double slit and diffraction grating (N-slits).
3. Polarization: Introduction to polarization, Malus law, double refraction, Nicol's prism, Brewster’s law
   Applications of Interference, Diffraction & Polarization in industry.

UNIT-II Crystallography – XRD methods

UNIT-III Defects in Crystals & Principles of Quantum Mechanics
6. Defects in Crystals: Point Defects: Vacancies, Substitution, Interstitial, Frenkel and Schottky Defects, Concentration of vacancies at given temperature, concentration of Schottky & Frenkel defects, Qualitative treatment of line (Edge and Screw Dislocations) Defects, Burger’s Vector, Surface Defects and Volume Defects. (Qualitative treatment)

UNIT-IV Band Theory of Solids

UNIT-V Acoustics of Building & Acoustic Quieting and Ultrasonics

Ultrasonics:
Concept of ultrasonics wave generation, Different methods of generation of Ultrasonic’s (Piezostriction and Magnetostriiction), concept of NDT & Applications.

UNIT-VI Dielectric and Magnetic Properties

UNIT-VII Lasers and Fiber Optics

UNIT-VIII Nanotechnology

TEXT BOOKS:
7. Engineering Physics – Adeel Ahmad & B S Bellubbi (Florence Publication, Hyd)

REFERENCES:
1. Solid state physics -- M.Arumugam
2. Applied physics – Mani naidu
I Year B.Tech.

6751005

ENGINEERING CHEMISTRY

UNIT I:

UNIT II:

UNIT III:

UNIT IV:

UNIT V:

UNIT VI:

UNIT VII:
Phase rule: Definitions: phase, component, degree of freedom, phase rule equitation. Phase diagrams - one component system: water system. Two component system lead- silver system, heat treatment based on iron-carbon phase diagram, hardening, annealing.

UNIT VIII:

TEXT BOOKS:

REFERENCE BOOKS

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6751006  

COMPUTER PROGRAMMING AND DATA STRUCTURES

UNIT - I  

UNIT - II  
Selection Statements – if and switch statements, Repetition statements – while, for, do-while statements, Loop examples, other statements related to looping – break, continue, goto, Simple C Programming examples.

UNIT - III  
Designing Structured Programmes, Functions, basics, user defined functions, inter function communication, Standard functions, Scope, Storage classes-auto, register, static, extern, scope rules, type qualifiers, recursion- recursive functions, Preprocessor commands, example C programmes 
Arrays – Concepts, using arrays in C, inter function communication, array applications, two – dimensional arrays, multidimensional arrays, C programme examples.

UNIT - IV  
Pointers – Introduction (Basic Concepts), Pointers for inter function communication, pointers to pointers, compatibility, memory allocation functions, array of pointers, programming applications, pointers to void, pointers to functions, command – line arguments. 
Strings – Concepts, C Strings, String Input / Output functions, arrays of strings, string manipulation functions, string / data conversion, C programme examples.

UNIT - V  
Derived types – Structures – Declaration, definition and initialization of structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit fields, enumerated types, C programming examples.

UNIT - VI  
Input and Output – Concept of a file, streams, standard input / output functions, formatted input / output functions, text files and binary files, file input / output operations, file status functions (error handling), C programme examples.

UNIT – VII  
Searching and Sorting – Sorting- selection sort, bubble sort, insertion sort, quick sort, merge sort, Searching-linear and binary search methods.

UNIT - VIII  
Data Structures – Introduction to Data Structures, abstract data types, Linear list – singly linked list implementation, insertion, deletion and searching operations on linear list, Stacks-Operations, array and linked representations of stacks, stack application-infix to postfix conversion, postfix expression evaluation, recursion implementation, Queues-operations, array and linked representations.

TEXT BOOKS :

REFERENCES:
2. The C Programming Language, B.W. Kernighan and Dennis M.Ritchie, PHI/Pearson Education
7. C Programming & Data Structures, E. Balagurusamy, TMH.
8. C Programming & Data Structures, P. Dey, M Ghosh R Thereja, Oxford University Press
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6751007  

**ENGINEERING DRAWING**

**UNIT – I**  
**INTRODUCTION TO ENGINEERING DRAWING :** Principles of Engineering Graphics and their Significance – Drawing Instruments and their Use – Conventions in Drawing – Lettering – BIS Conventions. Curves used in Engineering Practice & their Constructions:  
a) Conic Sections including the Rectangular Hyperbola – General method only.  
b) Cycloid, Epicycloid and Hypocycloid  
c) Involute.  
d) Scales: Different types of Scales, Plain scales comparative scales, scales of chords.

**UNIT – II**  
**DRAWING OF PROJECTIONS OR VIEWS ORTHOGRAPHIC PROJECTION IN FIRST ANGLE PROJECTION:** Principles of Orthographic Projections – Conventions – First and Third Angle, Projections of Points and Lines inclined to both planes, True lengths, traces.

**UNIT – III**  
**PROJECTIONS OF PLANES & SOLIDS:** Projections of regular Planes, auxiliary planes and Auxiliary projection inclined to both planes. Projections of Regular Solids inclined to both planes – Auxiliary Views.

**UNIT – IV**  
**SECTIONS AND SECTIONAL VIEWS:-** Right Regular Solids – Prism, Cylinder, Pyramid, Cone – Auxiliary views.

**UNIT – V**  
**DEVELOPMENT AND INTERPENETRATION OF SOLIDS:** Development of Surfaces of Right, Regular Solids – Prisms, Cylinder, Pyramid, Cone and their parts. Interpenetration of Right Regular Solids

**UNIT - VI**  
**INTERSECTION OF SOLIDS:-** Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone.

**UNIT – VII**  

**UNIT – VIII**  
**TRANSFORMATION OF PROJECTIONS :** Conversion of Isometric Views to Orthographic Views – Conventions, Introduction to perspective projections(Practise not required)

**UNIT – VIII**  
**PERSPECTIVE PROJECTIONS :** Perspective View : Points, Lines, Plane Figures and Simple Solids, Vanishing Point Methods (General Method only).

**TEXT BOOK :**  
1. Engineering Drawing, N.D. Bhat / Charotar  
3. Engineering Drawing – Basant Agrawal, TMH

**REFERENCES :**  
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I Year B.Tech. C.E.

COMPUTER PROGRAMMING LAB

Objectives:
- To make the student learn a programming language.
- To teach the student to write programs in C to solve the problems.
- To introduce the student to simple linear data structures such as lists, stacks, queues.

Recommended Systems/Software Requirements:
- Intel based desktop PC
- ANSI C Compiler with Supporting Editors

Week 1.
a) Write a C program to find the sum of individual digits of a positive integer.
b) A Fibonacci Sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.
c) Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.

Week 2.
a) Write a C program to calculate the following Sum:
   \[ \text{Sum}=1-x^2/2! +x^4/4! -x^6/6! +x^8/8! -x^{10}/10! \]
b) Write a C program to find the roots of a quadratic equation.

Week 3
a) Write C programs that use both recursive and non-recursive functions
   i) To find the factorial of a given integer.
   ii) To find the GCD (greatest common divisor) of two given integers.
   iii) To solve Towers of Hanoi problem.

Week 4
a) The total distance travelled by vehicle in ‘t’ seconds is given by distance \[ = ut+1/2at^2 \] where ‘u’ and ‘a’ are the initial velocity (m/sec.) and acceleration (m/sec^2). Write C program to find the distance travelled at regular intervals of time given the values of ‘u’ and ‘a’. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of ‘u’ and ‘a’.
b) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,* , /, % and use Switch Statement)

Week 5
a) Write a C program to find both the largest and smallest number in a list of integers.
b) Write a C program that uses functions to perform the following:
   i) Addition of Two Matrices
   ii) Multiplication of Two Matrices

Week 6
a) Write a C program that uses functions to perform the following operations:
   i) To insert a sub-string in to a given main string from a given position.
   ii) To delete n Characters from a given position in a given string.
b) Write a C program to determine if the given string is a palindrome or not

Week 7
a) Write a C program that displays the position or index in the string S where the string T begins, or –1 if S doesn’t contain T.
b) Write a C program to count the lines, words and characters in a given text.

Week 8
a) Write a C program to generate Pascal’s triangle.
b) Write a C program to construct a pyramid of numbers.
Week 9
Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression:
\[1 + x^2 + x^3 + \ldots + x^n\]
For example: if n is 3 and x is 5, then the program computes 1+5+25+125.
Print x, n, the sum
Perform error checking. For example, the formula does not make sense for negative exponents – if n is less than 0. Have your program print an error message if n<0, then go back and read in the next pair of numbers of without computing the sum. Are any values of x also illegal? If so, test for them too.

Week 10
a) 2’s complement of a number is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus 2’s complement of 11100 is 00100. Write a C program to find the 2’s complement of a binary number.
b) Write a C program to convert a Roman numeral to its decimal equivalent.

Week 11
Write a C program that uses functions to perform the following operations:
   i) Reading a complex number
   ii) Writing a complex number
   iii) Addition of two complex numbers
   iv) Multiplication of two complex numbers
(Note: represent complex number using a structure.)

Week 12
a) Write a C program which copies one file to another.
b) Write a C program to reverse the first n characters in a file.
(Note: The file name and n are specified on the command line.)

Week 13
a) Write a C programme to display the contents of a file.
b) Write a C programme to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file)

Week 14
Write a C program that uses functions to perform the following operations on singly linked list:
   i) Creation   ii) Insertion   iii) Deletion   iv) Traversal

Week 15
Write C programs that implement stack (its operations) using
   i) Arrays   ii) Pointers

Week 16
Write C programs that implement Queue (its operations) using
   i) Arrays   ii) Pointers

Week 17
Write a C program that uses Stack operations to perform the following:
   i) Converting infix expression into postfix expression
   ii) Evaluating the postfix expression

Week 18
Write a C program that implements the following sorting methods to sort a given list of integers in ascending order
   i) Bubble sort
   ii) Selection sort

Week 19
Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:
   i) Linear search   ii) Binary search

Week 20
Write C program that implements the following sorting method to sort a given list of integers in ascending order:
   i) Quick sort
Week 21
Write C program that implement the following sorting method to sort a given list of integers in ascending order:
   i) Merge sort

Week 22
Write C programs to implement the Lagrange interpolation and Newton- Gregory forward interpolation.

Week 23
Write C programs to implement the linear regression and polynomial regression algorithms.

Week 24
Write C programs to implement Trapezoidal and Simpson methods.

Text Books
4. Practical C Programming, Steve Oualline, O’Reilly, SPD. TMH publications.
ENGINEERING PHYSICS / ENGINEERING CHEMISTRY LAB

ENGINEERING PHYSICS LAB
(Any twelve experiments compulsory)

1. Dispersive power of the material of a prism – Spectrometer
5. Time constant of an R-C circuit.
6. L-C-R circuit.
7. Magnetic field along the axis of current carrying coil – Stewart and Gees method.
8. Study the characteristics of LED and LASER sources.
9. Study the characteristics of p-i-n and avalanche photodiode detectors.
11. Evaluation of numerical aperture of given fibre.
12. Energy gap of a material of p-n junction.
13. Thermo electric effect – Seebeck effect and Peltier effect.
14. Torsional pendulum.

ENGINEERING CHEMISTRY LAB
List of Experiments (Any 12 of the following):

Titrmetric:
   a. Estimation of hardness of water by EDTA method. (or)
      Estimation of calcium in limestone by Permanganometry.

Mineral Analysis:
   2 Determination of percentage of copper in brass
   3 Estimation of manganese dioxide in pyrolusite.

Instrumental Methods:
4. Colorimetry:
   Determination of ferrous iron in cement by colorimetric method.
   (Or) Estimation of Copper by Colorimetric method.
5. Conductometry:
   Conductometric titration of strong acid Vs strong base.
   (or) Conductometric titration of mixture of acids Vs strong base.
6. Potentiometry:
   Titration of strong acid Vs strong base by potentiometry.
   (or) Titration of weak acid Vs strong base by potentiometry.

Physical Properties:
7. Determination of viscosity of sample oil by redwood/oswald’s viscometer
8. Determination Surface Tension of lubricants.
Identification and Preparations:
9. Identification of functional groups present in organic compounds.
10. Preparation of organic compounds
   Asprin (or) Benzimidazole

Kinetics:
11. To determine the rate constant of hydrolysis of methyl acetate catalysed by an acid and also the energy of activation. (or) To study the kinetics of reaction between K$_2$S$_2$O$_8$ and KI.
12. Demonstration Experiments (Any One of the following):
   a. Determination of dissociation constant of weak acid by PH metry
   b. Preparation of Thiokol rubber
   c. Adsorption on Charcoal
   d. Heat of reaction

TEXT BOOKS:
2. Inorganic quantitative analysis, Vogel.

REFERENCE BOOKS:
The Language Lab focuses on the production and practice of sounds of language and familiarises the students with the use of English in everyday situations and contexts.

Objectives:
1. To expose the students to a variety of self-instructional, learner-friendly modes of language learning.
2. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required facility to face computer-based competitive exams such GRE, TOEFL, GMAT etc.
3. To enable them to learn better pronunciation through stress on word accent, intonation, and rhythm.
4. To train them to use language effectively to face interviews, group discussions, public speaking.
5. To initiate them into greater use of the computer in resume preparation, report writing, format-making etc.

SYLLABUS:

The following course content is prescribed for the English Language Laboratory sessions:
1. Introduction to the Sounds of English- Vowels, Diphthongs & Consonants.
2. Introduction to Stress and Intonation.
3. Situational Dialogues / Role Play.
5. ‘Just A Minute’ Sessions (JAM).
6. Describing Objects / Situations / People.
7. Information Transfer
8. Debate
10. Giving Directions.

Minimum Requirement:

The English Language Lab shall have two parts:

i) The Computer aided Language Lab for 60 students with 60 systems, one master console, LAN facility and English language software for self-study by learners.

ii) The Communication Skills Lab with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo-audio & video system and camcorder etc.

System Requirement (Hardware component):
Computer network with Lan with minimum 60 multimedia systems with the following specifications:

i) P – IV Processor
   a) Speed – 2.8 GHZ
   b) RAM – 512 MB Minimum
   c) Hard Disk – 80 GB

ii) Headphones of High quality

Suggested Software:
• Cambridge Advanced Learners’ English Dictionary with CD.
• The Rosetta Stone English Library.
• Clarity Pronunciation Power – Part I.
• Mastering English in Vocabulary, Grammar, Spellings, Composition
• Dorling Kindersley series of Grammar, Punctuation, Composition etc.
• Language in Use, Foundation Books Pvt Ltd with CD.
• Oxford Advanced Learner’s Compass, 7th Edition.
• Learning to Speak English - 4 CDs.
• Vocabulary in Use, Michael McCarthy, Felicity O’Den, Cambridge.
• Murphy’s English Grammar, Cambridge with CD.
• English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge
Books Suggested for English Language Lab Library (to be located within the lab in addition to the CDs of the text book which are loaded on the systems):

1. **A Handbook for English Language Laboratories** – Prof. E. Suresh Kumar, P. Sreehari, Foundation Books.
3. **English Conversation Practice** by Grant Taylor, Tata McGraw Hill.
5. **Communicate or Collapse: A Handbook of Effective Public Speaking, Group Discussions and Interviews**, by Pushpa Lata & Kumar, Prentice-Hall of India.
7. **Spoken English** by R. K. Bansal & J. B. Harrison, Orient Longman.
8. **English Language Communication: A Reader cum Lab Manual** Dr A Ramakrishna Rao, Dr. G. Natanam & Prof. S. A. Sankaranarayanan, Anuradha Publications, Chennai.
12. **Spoken English: A foundation Course, Parts 1 & 2**, Kamlesh Sadanand and Susheela punitha, Orient Longman

**DISTRIBUTION AND WEIGHTAGE OF MARKS**

**English Language Laboratory Practical Paper:**

1. The practical examinations for the English Language Laboratory shall be conducted as per the University norms prescribed for the core engineering practical sessions.
2. For the Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 year-end Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The year-end Examination shall be conducted by an external examiner/ or the teacher concerned with the help of another member of the staff of the same department of the same institution.
ENGINEERING WORKSHOP / IT WORKSHOP

1. TRADES FOR EXERCISES:

At least two exercises from each trade:
1. Carpentry
2. Fitting
3. Tin-Smithy and Development of jobs carried out and soldering.
4. Black Smithy
5. House-wiring
6. Foundry
7. Welding
8. Power tools in construction, wood working, electrical engineering and mechanical Engineering.
9. IT Workshop-I : Computer hardware, identification of parts, Disassembly, Assembly of computer to working condition, Simple diagnostic exercises.
10. IT workshop-II : Installation of Operating system Windows and Linux, simple diagnostic exercises.

2. TRADES FOR DEMONSTRATION & EXPOSURE:
1. Plumbing
2. Machine Shop
3. Metal Cutting (Water Plasma)

TEXT BOOK:
2. Workshop Manual by Venkat Reddy
J.B. INSTITUTE OF ENGINEERING & TECHNOLOGY  
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II Year B.Tech. C.E. I Sem  
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MATHEMATICS – II 

UNIT – I: Linear Systems 

UNIT – II: Eigen values & Eigen vectors 

UNIT-III: Linear Transformations 

UNIT –IV: Quadratic forms 
Quadratic Forms - Reduction of quadratic form to canonical form – Rank - Positive, negative definite - semi definite - index - signature - Sylvester law, Applications of quadratic forms.

UNIT-V: Fourier Series and Fourier transforms 


UNIT –VI: Introduction to partial differential equations 
Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions – solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations.

UNIT –VII: Solution of partial differential equations 
Classification of second order linear Partial Differential Equations, separation of variables methods for the solutions of one dimensional heat equation, wave equation and two-dimensional Laplace’s equation under initial and boundary conditions.

UNIT-VIII: Z-Transforms
Z-Transform-Properties-Damping rule-Shifting rule-Initial & Final value theorems-Convolution theorem-Solutions of difference equation by Z-Transform

TEXT BOOKS:

REFERENCES:
UNIT I
ELECTRICAL CIRCUITS: Basic definitions, Types of elements, Ohm’s Law, Resistive networks, Kirchhoff’s Laws, Inductive networks, Capacitive networks, Series, Parallel circuits and Star-delta and delta-star transformations.

UNIT II

UNIT III
TRANSFORMERS: Principle of operation of single phase transformers – emf equation – losses – efficiency and regulation

UNIT IV

UNIT V
INSTRUMENTS: Basic Principle of indicating instruments – permanent magnet moving coil and moving iron instruments.

UNIT VI
DIODE AND IT’S CHARACTERISTICS: P-N junction diode, symbol, V-I Characteristics, Diode Applications, Rectifiers – Half wave, Full wave and Bridge rectifiers (simple Problems)

UNIT VII
TRANSISTORS: P-N-P and N-P-N Junction transistor, Transistor as an amplifier, SCR characteristics and applications

UNIT VIII:

TEXT BOOKS:
2. Essentials of Electrical and Computer Engineering by David V. Kerns, JR. J. David Irwin

REFERENCES:
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
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II Year B.Tech. C.E. I Sem
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STRENGTH OF MATERIALS – I

UNIT – I
SIMPLE STRESSES AND STRAINS:

UNIT – II

UNIT – III
SHEAR FORCE AND BENDING MOMENT:
Definition of beam – Types of beams – Concept of shear force and bending moment – S.F and B.M diagrams for cantilever, simply supported and overhanging beams subjected to point loads, uniformly distributed load, uniformly varying loads and combination of these loads – Point of contraflexure – Relation between S.F., B.M and rate of loading at a section of a beam.

NIT – IV
FLEXURAL STRESSES:

UNIT – V
SHEAR STRESSES:
Derivation of formula – Shear stress distribution across various beam sections like rectangular, circular, triangular, I, T angle sections.

UNIT – VI
DEFLECTION OF BEAMS:
Bending into a circular arc – slope, deflection and radius of curvature – Differential equation for the elastic line of a beam – Double integration and Macaulay’s methods – Determination of slope and deflection for cantilever and simply supported beams subjected to point loads. U.D.L., Uniformly varying load-Mohr’s theorems – Moment area method – application to simple cases including overhanging beams.

UNIT – VII
THIN CYLINDERS:

UNIT – VIII
THICK CYLINDERS:

TEXT BOOKS:
1. Mechanics of Materials – Dr. B. C. Punmia, Laxmi Publications,

REFERENCES:
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
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II Year B.Tech. C.E.I Sem
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SURVEYING

UNIT – I
INTRODUCTION: plane surveying, Objectives, Principles and classifications. Distance measurement conventions and methods; use of chain and tape

UNIT – II:
COMPASS AND PLAIN TABLE SURVEY: Obstacles in distance measurement, field related numerical problems in compass survey, equipment and procedure for plain table field work.

UNIT – III

UNIT – IV
COMPUTATION OF AREAS AND VOLUMES: Area from field notes, computation of areas along irregular boundaries and area consisting of regular boundaries. Embankments and cutting for a level section and two level sections, determination of the capacity of reservoir, volume of barrow pits.

UNIT - V
THEODOLITE: Theodolite, description, uses and adjustments – temporary and permanent, measurement of horizontal and vertical angles. Principles of Electronic Theodolite., Traversing,Electronic Distance measurement(EDM).

UNIT – VI
TACHEOMETRIC SURVEYING:
Trigonometric leveling , Stadia and tangential methods of Tacheometry. Distance and Elevation formulae for Staff vertical position.

UNIT – VII
Curves: Types of curves, design and setting out – simple , compound and vertical curves.

UNIT - VIII
INTRODUCTION TO ADVANCED SURVEYING : Introduction to geodetic surveying, Total Station and Global positioning system, Introduction to Geographic information system (GIS).

TEXT BOOKS:
1. "Surveying (Vol – 1, 2 & 3), by B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain - Laxmi Publications (P) ltd., New Delhi

REFERENCES:
2. Arora K R “Surveying Vol 1, 2 & 3), Standard Book House, Delhi, 2004
FLUID MECHANICS

UNIT I
INTRODUCTION: Dimensions and units – Physical properties of fluids specific gravity, viscosity, surface tension, vapor pressure and their influences on fluid motion pressure at a point, Pascal’s law, Hydrostatic law - atmospheric, gauge and vacuum pressure- measurement of pressure. Pressure gauges, Manometers: differential and Micro Manometers.

UNIT II
HYDROSTATIC FORCES: Hydrostatic forces on submerged plane, Horizontal, Vertical, inclined and curved surfaces – Center of pressure. Derivations and problems.

UNIT III
FLUID KINEMATICS: Description of fluid flow, Stream line, path line and streak lines and stream tube. Classification of flows : Steady, unsteady, uniform, non-uniform, laminar, turbulent, rotational and irrotational flows – Equation of continuity for one, two , three dimensional flows – stream and velocity potential functions, flownet analysis.

UNIT IV
FLUID DYNAMICS: Surface and body forces – Euler’s and Bernoulli’s equations for flow along a stream line for 3-D flow, (Navier – stokes equations (Explanationary) Momentum equation and its application – forces on pipe bend.

UNIT V
BOUNDARY LAYER THEORY: Approximate Solutions of Navier Stoke’s Equations – Boundary layer – concepts, Prandtl contribution, Characteristics of boundary layer along a thin flat plate, Vonkarmen momentum integral equation, laminar and turbulent Boundary layers (no deviation), BL in transition, separation of BL, control of BL, flow around submerged objects-Drag and Lift- Magnus effect.

UNIT VI
LAMINAR & TURBULENT FLOWS: Reynold’s experiment – Characteristics of Laminar & Turbulent flows. Flow between parallel plates, Flow through long tubes, flow through inclined tubes.

UNIT VII

UNIT VIII
MEASUREMENT OF FLOW: Pitot tube, Venturi meter and orifice meter – classification of orifices, flow over rectangular, triangular and trapezoidal and Stepped notches --Broad crested weirs.

TEXT BOOKS:
3. Introduction to Fluid Machines by Edward J. Shaughnessy, Jr, Ira M. Katz and James P. Schaffer , Oxford University Press, New Delhi

REFERENCES:
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Unit I Introduction to Managerial Economics:

Unit II Elasticity of Demand: Definition, Types, Measurement and Significance of Elasticity of Demand. Demand Forecasting, Factors governing demand forecasting, methods of demand forecasting (survey methods, statistical methods, expert opinion method, test marketing, controlled experiments, judgmental approach to demand forecasting)

Cost Analysis: Cost concepts, Opportunity cost, Fixed vs. Variable costs, Explicit costs Vs. Implicit costs, Out of pocket costs vs. Imputed costs. Break-even Analysis (BEA)—Determination of Break-Even Point (simple problems)—Managerial Significance and limitations of BEA.

Unit IV Introduction to Markets & Pricing Policies:
Market structures: Types of competition, Features of Perfect competition, Monopoly and Monopolistic Competition. Price-Output Determination in case of Perfect Competition and Monopoly.


Unit VI Capital and Capital Budgeting: Capital and its significance, Types of Capital, Estimation of Fixed and Working capital requirements, Methods and sources of raising finance.
Nature and scope of capital budgeting, features of capital budgeting proposals, Methods of Capital Budgeting: Payback Method, Accounting Rate of Return (ARR) and Net Present Value Method (simple problems)


Unit VIII Financial Analysis through ratios: Computation, Analysis and Interpretation of Liquidity Ratios (Current Ratio and quick ratio), Activity Ratios (Inventory turnover ratio and Debtor Turnover ratio), Capital structure Ratios (Debt- Equity ratio, Interest Coverage ratio), and Profitability ratios (Gross Profit Ratio, Net Profit ratio, Operating Profit Ratio, P/E Ratio and EPS).

TEXT BOOKS:

REFERENCES:

Prerequisites: Nil

Objective: To explain the basic principles of managerial economics, accounting and current business environment underlying business decision making.

Codes/Tables: Present Value Tables need to be permitted into the examinations Hall.
Question Paper Pattern: 5 Questions to be answered out of 8 questions.
Each question should not have more than 3 bits.
LIST OF EXERCISES:
1. Survey of an area by chain survey (closed traverse) & Plotting
2. Chaining across obstacles
3. Determination of distance between two inaccessible points with compass.
4. Surveying of a given area by prismatic compass (closed traverse) and plotting after adjustment.
5. Radiation method, intersection methods by plane Table survey
6. Two point and three point problems in plane table survey
7. Traversing by plane table survey
8. Fly leveling (differential leveling)
10. Two exercises on contouring.

List of Major Equipment:
1. Chains, tapes, Ranging rods, cross staff, arrows
2. Compasses and Tripods, Optical square.
3. Plane tables, Alidade, Plumbing fork, trough compasses
4. Leveling instruments and leveling staves
5. Box sextants, planimeter.
STRENGTH OF MATERIALS LAB

1. Tension test
2. Bending test on (Steel / Wood) Cantilever beam.
3. Bending test on simple support beam.
4. Torsion test
5. Hardness test
6. Spring test
7. Compression test on wood or concrete
8. Impact test
9. Shear test
10. Verification of Maxwell’s Reciprocal theorem on beams.
11. Use of electrical resistance strain gauges

List of Major Equipment:

1. UTM for conducting tension test on rods
2. Steel beam for flexure test
3. Wooden beam for flexure test
4. Torsion testing machine
5. Brinnell’s / Rock well’s hardness testing machine
6. Spring testing machine
7. Compression testing machine
8. Izod Impact machine
9. Shear testing machine
10. Beam setup for Maxwell’s theorem verification.
11. Continuous beam setup
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PROBABILITY AND STATISTICS  

UNIT-I: Probability:  

UNIT-II: Distributions  
Binomial , Poisson & normal distributions related properties . Sampling distributions – Sampling distribution of means ( \( \sigma \) known and Unknown)  

UNIT-III: Testing of Hypothesis I  
Tests of hypothesis point estimations – interval estimations Bayesian estimation. Large samples, Null hypothesis – Alternate hypothesis type I, & type II errors – critical region confidential interval for mean testing of single variance. Difference between the mean.  

UNIT-IV: Testing of Hypothesis II  
Confidential interval for the proportions. Tests of hypothesis for the proportions single and difference between the proportions.  

UNIT-V: Small samples  
Confidence interval for the t- distribution – Tests of hypothesis – t- distributions, F- distributions \( \chi^2 \) distribution. Test of Hypothesis.  

UNIT-VI: Correlation & Regression  
Coefficient of correlation – Regression Coefficient – The lines of regression – The rank correlation  

UNIT-VII: Queuing Theory  
Arrival Theorem - Pure Birth process and Death Process M/M/1 Model . MATLAB/R Introduction.  

UNIT-VIII: Stochastic processes  

TEXT BOOKS:  
3. Introduction to MATLAB by RudraGupta  
4.  
REFERENCES:  

40
STRENGTH OF MATERIALS – II

UNIT – I
TORSION OF CIRCULAR SHAFTS :

UNIT – II
SPRINGS
Introduction – Types of springs – deflection of close and open coiled helical springs under axial pull and axial couple – springs in series and parallel – Carriage or leaf springs.

UNIT – III
COLUMNS AND STRUTS :

UNIT – IV
DIRECT AND BENDING STRESSES:
Stresses under the combined action of direct loading and bending moment, core of a section – determination of stresses in the case of chimneys, retaining walls and dams – conditions for stability – stresses due to direct loading and bending moment about both axis.

UNIT – V
UNSYMETRICAL BENDING:
Introduction – Centroidal principal axes of section – Graphical method for locating principal axes – Moments of inertia referred to any set of rectangular axes – Stresses in beams subjected to unsymmetrical bending – Principal axes – Resolution of bending moment into two rectangular axes through the centroid – Location of neutral axis - Deflection of beams under unsymmetrical bending.

UNIT – VI
BEAMS CURVED IN PLAN:
Introduction – circular beams loaded uniformly and supported on symmetrically placed Columns – Semi-circular beam simply-supported on three equally spaced supports.

UNIT – VII
PROPPED CANTILEVERS: Analysis of propped cantilevers-shear force and bending moment diagrams-Deflection of propped cantilevers.

FIXED BEAMS – Introduction to statically indeterminate beams with uniformly distributed load, central point load, eccentric point load, number of point loads, uniformly varying load, couple and combination of loads - Shear force and Bending moment diagrams-Deflection of fixed beams effect of sinking of support, effect of rotation of a support.

UNIT – VIII
CONTINUOUS BEAMS : Introduction-Clapeyron’s theorem of three moments- Analysis of continuous beams with constant moment of inertia with one or both ends fixed-continuous beams with overhang, continuous beams with different moment of inertia for different spans-Effects of sinking of supports-shear force and Bending moment diagrams.

TEXT BOOKS:
2. Strength of materials by Basavarajaiah and Mahadevappa, University press

REFERENCES:
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
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II Year B.Tech. C.E. II Sem
6754003

HYDRAULICS AND HYRAULIC MACHINERY

UNIT – I
OPEN CHANNEL FLOW: Types of flows - Type of channels – Velocity distribution– Energy and momentum correction factors – Chezy’s, Manning’s; and Bazin formulae for uniform flow – Most Economical sections.

UNIT II
OPEN CHANNEL FLOW II: Non uniform flow-Dynamic equation for G.V.F., Mild, Critical, Steep, horizontal and adverse slopes-surface profiles-direct step method- Rapidly varied flow, hydraulic jump, energy dissipation.

UNIT - III
HYDRAULIC SIMILITUDE : Dimensional analysis-Rayleigh’s method and Buckingham’s pi theorem-study of Hydraulic models – Geometric, kinematic and dynamic similarities-dimensionless numbers – model and prototype relations.

UNIT – IV
BASICS OF TURBO MACHINERY : Hydrodynamic force of jets on stationary and moving flat, inclined and curved vanes, jet striking centrally and at tip, velocity triangles at inlet and outlet, expressions for work done and efficiency-Angular momentum principle, Applications to radial flow turbines.

UNIT - V
HYDRAULIC TURBINES – I: Layout of a typical Hydropower installation – Heads and efficiencies-classification of turbines-pelton wheel-Francis turbine-Kaplan turbine-working, working proportions, velocity diagram, work done and efficiency, hydraulic design, draft tube – theory and function efficiency.

UNIT – VI
HYDRAULIC TURBINES – II : Governing of turbines-surge tanks-unit and specific turbines-unit speed-unit quantity-unit power-specific speed performance characteristics-geometric similarity-cavitation.

UNIT – VII

UNIT – VIII

TEXT BOOKS:

REFERENCES :
1. A text of Fluid mechanics and hydraulic machines by Dr. R.K. Bansal - Laxmi Publications (P) ltd., New Delhi
3. Fluid mechanics and fluid machines by Rajput, S.Chand &Co.
## UNIT-I: ECOSYSTEMS
Concept of ecosystem, Classification of ecosystem, Functions of ecosystem, Food chains, Food webs and ecological pyramids, Flow of energy, Biogeochemical cycles, Biomagnification, carrying capacity.

## UNIT-II: NATURAL RESOURCES
Classification of Resources: Living and Non-Living resources, Renewable and Non-Renewable resources. Water resources: use and over utilization, Land resources, land degradation, Forest resources, Mineral resources uses. Energy resources: growing energy needs, use of alternate energy sources-case studies. Environmental effects due to exploitation of various resources.

## UNIT-III: BIODIVERSITY AND BIOTIC RESOURCES
Species, ecosystem diversity, Hotspots, Value of biodiversity, Threats to biodiversity, Conservation of biodiversity: In-Situ and Ex-Situ conservation, Biological disasters, pandemic and epidemics, Biological warfare.

## UNIT-IV: ENVIRONMENTAL POLLUTION AND CONTROL
Classification of pollutions and pollutants, causes, effects of water, air, noise pollution, Introduction to control technologies: Water (primary, secondary, tertiary), Air(particulate and gaseous emissions), Soil(conservation and remediation), Noise(controlling devices) Solid waste : types, collection and disposal methods, characteristics of e-waste and its management.

## UNIT-V: GLOBAL ENVIRONMENTAL PROBLEMS AND GLOBAL EFFORTS

## UNIT-VI: ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND ENVIRONMENTAL MANAGEMENT PLAN

## UNIT-VII: ENVIRONMENTAL POLICY, LEGISLATION, RULES AND REGULATIONS

## UNIT-VIII: TOWARDS SUSTAINABLE FUTURE

### Text Book:
1. TEXT BOOK OF ENVIRONMENTAL Science and Technology by M.Anji Reddy 2007
2. Principles of Environmental Science and Engineering by P.Venugopal Rao
3. Introduction to Environmental Studies by K.Mukkanti

### References
1. Tata McgrawHill : Introduction to Environmental Studies by Benny Joseph
2. Environmental studies by Erach Bharucha 2005, University Grants Commission, University Press
STRUCTURAL ANALYSIS – I

UNIT – I
Arches: Types of arches- three and two hinged arches- Circular and parabolic arches- Yielding of supports- Effect of shortening of rib - Effect of temperature changes - Tied and Linear arch.

UNIT-II
SLOPE-DEFLECTION METHOD: Introduction, derivation of slope deflection equation, application to continuous beams with and without settlement of supports.

UNIT –III
MOMENT DISTRIBUTION METHOD: Introduction, applications to continuous beams with and without settlement of supports.

UNIT – IV
ENERGY THEOREMS: Introduction-Strain energy in linear elastic system, expression of strain energy due to axial load, bending moment and shear forces - Castigliano’s first theorem-Deflections of simple beams and pin jointed trusses.

UNIT – V
MOVING LOADS : Introduction maximum SF and BM at a given section and absolute maximum S.F. and B.M due to single concentrated load U.D load longer than the span, U.D load shorter than the span, two point loads with fixed distance between them and several point loads-Equivalent uniformly distributed load-Focal length.

UNIT – VI
INFLUENCE LINES: Definition of influence line for SF, Influence line for BM- load position for maximum SF at a section-Load position for maximum BM at a section - Point loads, UDL longer than the span, UDL shorter than the span Influence lines for forces in members of Pratt and Warren trusses.

UNIT –VII
INDETERMINATE STRUCTURAL ANALYSIS: Indeterminate Structural Analysis –Determination of static and kinematic indeterminacies –Solution of trusses with upto two degrees of internal and external indeterminacies –Castigliano’s theorem.

UNIT –VIII
MATRIX METHODS OF ANALYSIS: Introduction - Different approached to matrix methods - Static and Kinematic Indeterminacy-Flexibility and Stiffness methods for beams and simple frames.

TEXT BOOKS:
2. Analysis of Structures by T.S. Thandavamoorthy, Oxford University Press, New Delhi

REFERENCES:
5. Introduction to structural analysis by B.D. Nautiyal, New age international publishers, New Delhi.
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BUILDING MATERIALS, CONSTRUCTION AND PLANNING

UNIT – I
Stones and Bricks, Tiles: Building stones – classifications and quarrying – properties – structural requirements – dressing .
Bricks – Composition of Brick earth – manufacture and structural requirements.

UNIT – II
Cement & Admixtures: Ingredients of cement – manufacture – field & lab tests
Admixtures – mineral & chemical admixtures – uses.

UNIT – III
reinforced glass bricks, steel & aluminum.

UNIT – IV
Building Components: Lintels, Arches, walls, vaults – stair cases – types of floors, types of roofs – flat, curved, trussed; foundations – types ;

UNIT - V
Masonry and Finishing's: Brick masonry – types – bonds ; Stone masonry – types ; Composite masonry – Brick-stone composite ; Concrete,
Reinforced brick. Finishers: Plastering, Pointing, Painting, Claddings – Types – Tiles - ACP

UNIT – VI
Form work: Requirements – Standards – Scaffolding – Design ; Shoring, Underpinning.

UNIT – VII
Building Services: Plumbing Services: Water Distribution, Sanitary – Lines & Fittings ; Ventilations: Functional requirements systems of
ventilations. Air-conditioning - Essentials and Types ; Acoustics – characteristic – absorption – Acoustic design ; Fire protection – FireHazards
– Classification of fire resistant materials and constructions.

UNIT – VIII
Building Planning: Principles of Building Planning, Classification of buildings and Building by laws.

TEXT BOOKS:

REFERENCES:
1. Building Materials by Duggal, New Age Internationsl
2. Building Construction by PC Verghese PHI.
COMPUTER AIDED DRAFTING OF BUILDINGS

1. Introduction to computer aided drafting
2. Software for CAD – Introduction to different softwares
3. Practice exercises on CAD software
4. Drawing of plans of buildings using software
   a) single storeyed buildings  b) multi storyed buildings
5. Developing sections and elevations for
   a) single storeyed buildings  b) multi storyed buildings
6. Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD softwares
7. Exercises on development of working of buildings

TEXT BOOKS :

LIST OF EXERCISES:
3. Trigonometric Leveling - Heights and distance problem (Two Exercises)
4. Heights and distance using Principles of tacheometric surveying (Two Exercises)
5. Curve setting – different methods. (Two Exercises)
6. Setting out works for buildings & pipe lines.
7. Determine of area using total station
8. Traversing using total station
9. contouring using total station
10. Determination of remote height using total station
11. Distance, gradient, Diff, height between tow inaccessible points using total stations

LIST OF EQUIPMENT:
1. Theodolites, and leveling staffs.
2. Tachometers.
3. Total station.
CONCRETE TECHNOLOGY

UNIT I

UNIT II

UNIT III

UNIT IV

UNIT V

UNIT VI
TESTING OF HARDENED CONCRETE: Compression tests – Tension tests – Factors affecting strength – Flexure tests – Splitting tests – Pull-out test, Non-destructive testing methods – codal provisions for NDT.


UNIT VII

UNIT VIII

TEXT BOOKS:
2. Concrete Technology by M.S.Shetty. – S.Chand & Co. ; 2004

REFERENCES:
2. Concrete Technology by A.R. Santha Kumar, Oxford university Press, New Delhi
DESIGN OF REINFORCED CONCRETE STRUCTURES

UNIT – I

UNIT – II
Beams : Limit state analysis and design of singly reinforced, doubly reinforced, T and L beam sections.

UNIT – III
Shear, Torsion and Bond : Limit state analysis and design of section for shear and torsion – concept of bond, anchorage and development length, I.S. code provisions. Design examples in simply supported and continuous beams, detailing.

UNIT - IV
Design of Two-way slabs, one way slab, continuous slab Using I S Coefficients

UNIT – V
Footings : Different types of footings – Design of isolated, square, rectangular, circular footings and Combined footings.

UNIT – VI

UNIT – VII
Limit state design for serviceability for deflection, cracking and codal provision.

UNIT – VIII
Miscellaneous design stair case design – Design of Canopy (Portico)

TEXT BOOKS:
2. Reinforced concrete design by N. Krishna Raju and R.N. Pranesh, New age International Publishers, New Delhi

REFERENCES :
UNIT – I INTRODUCTION: Importance of geology from Civil Engineering point of view. Brief study of case histories of failure of some Civil Engineering constructions due to geological draw backs. Importance of Physical geology, Petrology and Structural geology.

WEATHERING OF ROCKS: Its effect over the properties of rocks importance of weathering with REFERENCE to dams, reservoirs and tunnels weathering of common rock like “Granite”

UNIT – II MINERALOGY: Definition of mineral. Importance of study of minerals. Different methods of study of minerals. Advantages of study of minerals by physical properties. Role of study of physical properties of minerals in the identification of minerals. Study of physical properties of following common rock forming minerals: Feldspar, Quartz, Flint, Jasper, Olivine, Augite, Hornblende, Muscovite, Biotite, Asbestos, Chlorite, Kyanite, Garnet, Talc, Calcite. Study of other common economics minerals such as Pyrite, Hematite, Magnetite, Chlorite, Galena, Pyrolusite, Graphite, Magnesite, and Bauxite.


UNIT – IV STRUCTURAL GEOLOGY: Indian stratigraphy, and geological time scale, Out crop, strike and dip study of common geological structures associated with the rocks such as folds, faults unconformities, and joints - their important types.


UNIT – VII Ground water: Water table, common types of ground water, springs, cone of depression, geological controls of ground water movement, ground water exploration. Earth quakes, their causes and effects, shield areas and seismic belts. Seismic waves, Richter scale, precautions to be taken for building construction in seismic areas. Land slides, land slides hazards, water in land slides their causes and effect; measures to be taken to prevent their occurrence. Importance of study of ground water, Earthquake and landslides.

UNIT – VIII TUNNELS: Purposes of tunneling, Effects of Tunneling on the ground Role of Geological Considerations ( lithological, structural and ground water ) in tunneling over break and lining in tunnels, Tunnels in rock, subsidence over old mines , minining substances

TEXT BOOKS:
1) Principals of Engineering Geology by K.V.G.K. Gokhale – B.S publications
3) Engineering Geology by D. Venkat Reddy, Vikas Publications

REFERENCES:
2. Krynine & Judd, Principles of Engineering Geology & Geotechnics, CBS Publishers & Distribution,
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6755004

GEOTECHNICAL ENGINEERING - I

UNIT – I

UNIT – II

UNIT – III

UNIT - IV

UNIT – V
STRESS DISTRIBUTION IN SOILS: Boussinesq’s and Westergaard’s theories for point load, uniformly loaded circular and rectangular areas, pressure bulb, variation of vertical stress under point load along the vertical and horizontal plane, and Newmark’s influence chart for irregular areas.

UNIT – VI

UNIT - VII

UNIT - VIII

TEXT BOOKS:

REFERENCES:
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WATER RESOURCES ENGINEERING-I

UNIT I

UNIT-II
Abstraction from rainfall-evaporation, factors affecting evaporation, measurement of evaporation- Evapotranspiration- Penman and Blaney & Criddle Methods -Infiltration, factors affecting infiltration, measurement of infiltration, infiltration indices..

UNIT-III
Distribution of Runoff – Hydrograph Analysis Flood Hydrograph – Effective Rainfall – Base Flow- Base Flow Separation - Direct Runoff Hydrograph - Unit Hydrograph, definition, and limitations of applications of Unit hydrograph, derivation of Unit Hydrograph from Direct Runoff Hydrograph and vice versa - S-hydrograph, Synthetic Unit Hydrograph.

UNIT-IV
Ground water Occurrence, types of aquifers, aquifer parameters, porosity, specific yield, permeability, transmissivity and storage coefficient, Darcy’s law, radial flow to wells in confined and unconfined aquifers, Types of wells,- Well Construction – Well Development.

UNIT-V
Necessity and Importance of Irrigation, advantages and ill effects of Irrigation, types of Irrigation, methods of application of Irrigation water, Indian agricultural soils, methods of improving soil fertility –Crop Roation, preparation of land for Irrigation, standards of quality for Irrigation water.

UNIT-VI
Soil-water-plant relationship, vertical distribution of soil moisture, soil moisture constants, soil moisture tension, consumptive use, Duty and delta, factors affecting duty- Design discharge for a water course. Depth and frequency of Irrigation, irrigation efficiencies-Water Logging.

UNIT-VII
Classification of canals, Design of Irrigation canals by Kennedy’s and Lacey’s theories, balancing depth of cutting, IS standards for a canal design canal lining.

UNIT - VIII
Design Discharge over a catchment, Computation of design discharge-rational formula, SCS curve number method, flood frequency analysis-Introductory Part only. Stream Gauging – measurement and estimation of stream flow.

TEXT BOOKS:
2. Irrigation and water power engineering by Punmia & Lal, Laxmi publications pvt. Ltd., New Delhi

REFERENCES:
1. Elementary hydrology by V.P.Singh, PHI publications.
5. Applied hydrology by Ven Te Chow, David R. Maidment larry W. Mays Tata MC. Graw Hill.
6. Introduction to hydrology by Warren Viessvann, Jr, Garyl. Lewis, PHI
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WASTE MANAGEMENT
(ELECTIVE-I)

UNIT – I
Quality requirements of boiler and cooling waters – Quality requirements of process water for Textiles – Food processing and Brewery Industries – Boiler and Cooling water treatment methods.

UNIT – II

UNIT – III
Industrial waste water discharges into streams. Lakes and oceans and problems.

UNIT - IV

UNIT – V
Manufacturing Process and design origin of liquid waste from Textiles, Paper and Pulp industries, Thermal Power Plants and Tanneries, Special Characteristics, Effects and treatment methods.

UNIT - VI
Manufacturing Process and design origin of liquid waste from Fertilizers, Distillers, and Dairy, Special Characteristics, Effects and treatment methods.

UNIT - VII
Manufacturing Process and design origin of liquid waste from Sugar Mills, Steel Plants, Oil Refineries, and Pharmaceutical Plants, Special Characteristics, Effects and treatment methods.

UNIT – VIII
Common Effluent Treatment Plants – Advantages and Suitability, Limitations, Effluent Disposal Methods.

TEXT BOOK:

REFERENCES:
1. Liquid waste of Industry by Newmerow.
ENVIRONMENTAL IMPACT ASSESSMENT AND MANAGEMENT
(ELECTIVE-I)

UNIT – I
Basic concept of EIA : Initial environmental Examination, Elements of EIA, factors affecting EIA Impact evaluation and analysis, preparation of Environmental Base map, Classification of environmental parameters.

UNIT – II

UNIT – III
Impact of Developmental Activities and Land use: Introduction and Methodology for the assessment of soil and ground water, Delineation of study area, Identification of activities.

UNIT-IV
Assessment of Impact of development Activities on Vegetation and wildlife, environmental Impact on Deforestation – Causes and effects of deforestation.

UNIT-V
Procurement of relevant soil quality, Impact prediction, Assessment of Impact significance, Identification and Incorporation of mitigation measures.

UNIT - VI
E I A of surface water, Air and Biological environment: Methodology for the assessment of Impacts on surface water environment, Air pollution sources, Generalized approach for assessment of Air pollution Impact.

UNIT – VII
Environmental Audit & Environmental legislation objectives of Environmental Audit, Types of environmental Audit, Audit protocol, stages of Environmental Audit, onsite activities, evaluation of Audit data and preparation of Audit report, Post Audit activities.

UNIT - VIII

Case studies and preparation of Environmental Impact assessment statement for various Industries.

TEXT BOOKS:
1. Environmental Impact Assessment & Management. Publisher: Daya Author: B B Hosetti, A Kumar

REFERENCES:
2. Environmental Pollution and Control, by Dr H.S. Bhatia – Galgotia Publication (P) Ltd, Delhi
UNIT – I
Moment distribution material – Application to the analysis of portal frames with inclined legs and gable frames.

UNIT – II
Kani’s method – application to continuous beam – portal frames (upto single bay two storages)

UNIT – III
Plastic analysis – I – Ductility – ultimate load – plastic hinger – shape factor – moment curvature relations – upper and lover band the…

UNIT – IV

UNIT – V
Analysis of building frames by substitute frame – upto five bays method.

UNIT – VI
Analysis of frames for lateral force – portal and cantilever method.

UNIT – VII
Introduction to Finite Element method – Application to one dimensional elements – shape function – lagrangian serendipity elements.

UNIT – VIII

TEXT BOOKS

REFERENCES
2. Basic of Structural dynamics nad Seismic design/ S.R. Damodara swamy and S. Kavitha. – PHI, 2010
FLUID MECHANICS & HYDRAULIC MACHINERY LAB

1. Calibration of Venturimeter & Orifice meter
2. Determination of Coefficient of discharge for a small orifice / mouthpiece by constant head method.
3. Calibration of contracted Rectangular Notch and / Triangular Notch
5. Determination of Coefficient for minor losses.
6. Verification of Bernoulli’s equation.
7. Impact of jet on vanes
8. Study of hydraulic jump.
9. Performance test on Pelton wheel turbine
10. Performance test on Francis turbine.
11. Performance characteristics of a single stage/ multi-stage centrifugal pump.
12. Performance characteristics of a reciprocating pump.
ENGINEERING GEOLOGY LAB

1. Study of physical properties and identification of minerals referred under theory.

2. Megascopic and microscopic description and identification of rocks referred under theory.


4. Interpretation and drawing of sections for geological maps showing tilted beds, faults, uniformities etc.

5. Simple Structural Geology problems.

LAB EXAMINATION PATTERN:

1. Description and identification of SIX minerals

2. Description and identification of Six (including igneous, sedimentary and metamorphic rocks)

3. Interpretation of a Geological map along with a geological section.

4. Simple strike and Dip problems.
UNIT – I

UNIT – II

UNIT – III

UNIT – IV
Design of compress in members – Buckling class – slenderness ratio / strength design – laced – battened columns – splice – column base – slab /

UNIT – V
Design of Beamss – Plastic moment – Bending and shear strength / buckling – Builtup sections – laterally / supported beams.

UNIT – VI
Design of eccentric connections – Framed – stiffened / seat connection.

UNIT – VII

UNIT – VIII
Design of roof trusses – Types of roof trusses, loads on trusses – purlin design – truss design, Design of joints and end bearings.

TEXT BOOKS :

REFERENCE BOOKS :
1. Design of Steel structures by K.S. Sai Ram, Person Education.
ENVIRONMENTAL ENGINEERING

UNIT – I

UNIT – II
SOURCES OF WATER: Comparison from quality and quantity and other considerations – intakes – infiltration galleries, confined and unconfined aquifers distribution systems. – requirements – methods and layouts.

UNIT III

UNIT – IV

UNIT - V
Distribution systems – types of layouts of Distribution systems – design of distribution systems - Hardy Cross and equivalent pipe methods service reservoirs – joints, valves such as sluice valves, air valves, scour valves and check valves water meters – laying and testing of pipe lines – pump house.

UNIT - VI

UNIT – VI
Layout and general outline of various units in a waste water treatment plant – primary treatment design of screens – grit chambers – skimming tanks – sedimentation tanks – principles and design of biological treatment – trickling filters – standard and high rate.

UNIT - VIII

TEXT BOOKS:
3. Elements of environmental engineering by K.N. Duggal, S. Chand Publishers

REFERENCES :
2. Water and Waste Water Technology by Steel
3. Water and Waste Water Engineering by Fair Geyer and Okun
4. Waste water treatment- concepts and design approach by G.L. Karia and R.A. Christian, PHI
WATER RESOURCES ENGINEERING-II

UNIT-I
Storage Works-Reservoirs - Types of reservoirs, selection of site for reservoir, zones of storage of a reservoir, reservoir yield, estimation of capacity of reservoir using mass curve- Reservoir Sedimentation – Life of Reservoir. Types of dams, factors affecting selection of type of dam, factors governing selection of site for a dam.

UNIT-II
Gravity dams: Forces acting on a gravity dam, causes of failure of a gravity dam, elementary profile and practical profile of a gravity dam, limiting height of a low gravity dam. Factors of Safety - Stability Analysis, Foundation for a Gravity Dam, drainage and inspection galleries.

UNIT-III
Earth dams: types of Earth dams, causes of failure of earth dam, criteria for safe design of earth dam, seepage through earth dam-graphical method, measures for control of seepage.

UNIT-IV
Spillways: types of spillways, Design principles of Ogee spillways - Spillway gates. Energy Dissipaters and Stilling Basins Significance of Jump Height Curve and Tail Water Rating Curve - USBR and Indian types of Stilling Basins.

UNIT-V
Diversion Head works: Types of Diversion head works- weirs and barrages, layout of diversion head work - components. Causes and failure of Weirs and Barrages on permeable foundations, Silt Ejectors and Silt Excluders

UNIT-VI
Weirs on Permeable Foundations – Creep Theories - Bligh’s, Lane’s and Khosla’s theories, Determination of uplift pressure- Various Correction Factors – Design principles of weirs on permeable foundations using Creep theories - exit gradient, U/s and D/s Sheet Piles - Launching Apron.

UNIT-VII
Canal Falls - types of falls and their location, Design principles of Notch Fall and Sarada type Fall.
Canal regulation works, principles of design of distributory and head regulators, Canal Cross Regulators -canal outlets, types of canal modules, proportionality, sensitivity and flexibility.

UNIT-VIII
Cross Drainage works: types, selection of site, Design principles of aqueduct, siphon aqueduct and super passage. Design of Type II Aqueduct (Under Tunnel)

TEXT BOOKS:
1. Irrigation engineering and hydraulic structures by S.K Garg, Khanna publishers.
2. Irrigation and water power engineering by Punmia & Lal, Laxmi publications pvt. Ltd., New Delhi

REFERENCES:
1. Irrigation and water resources engineering by G.L. Asawa, New Age International Publishers
2. Theory and Design of Hydraulic structures by Varshney, Gupta & Gupta
3. Irrigation engineering by K.R.Arora
5. Introduction to hydrology by Warren Viessvann, Jr, Garyl. Lewis, PHI
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GEOTECHNICAL ENGINEERING-II

UNIT – I

UNIT – II

UNIT – III
EARTH PRESSURE THEORIES: Rankine’s theory of earth pressure – earth pressures in layered soils – Coulomb’s earth pressure theory – Culmann’s graphical method.

UNIT – IV
RETAINING WALLS: Types of retaining walls – stability of retaining walls against overturning, sliding, bearing capacity and drainage from backfill

UNIT – V
SHALLOW FOUNDATIONS - BEARING CAPACITY CRITERIA - Types - choice of foundation – Location of depth – Safe Bearing Capacity – Terzaghi, Meyerhof, Skempton and IS Methods

UNIT - VI
SHALLOW FOUNDATIONS - SETTLEMENT CRITERIA - Safe bearing pressure based on N- value – allowable bearing pressure; safe bearing capacity - plate load test – allowable settlements of structures.

UNIT - VII
PILE FOUNDATION: Types of piles – Load carrying capacity of piles based on static pile formulae – Dynamic pile formulae – Pile load tests - Load carrying capacity of pile groups in sands and clays – Settlement of pile groups.

UNIT - VIII

TEXT BOOKS:

REFERENCES:
3. Teng,W.C – Foundation Design . Prentice Hall, New Jersey
TRANSPORTATION ENGINEERING

UNIT I
HIGHWAY DEVELOPMENT AND PLANNING: Highway development in India – Necessity for Highway Planning- Different Road Development Plans.

UNIT – II
HIGHWAY PLANNING : Classification of Roads- Road Network Patterns – Highway Alignment- Factors affecting Alignment- Engineering Surveys – Drawings and Reports, Road Projects initiation need based planning.

UNIT – III
HIGHWAY GEOMETRIC DESIGN: Importance of Geometric Design- Design controls and Criteria- Highway Cross Section Elements- Sight Distance Elements- Stopping sight Distance, Overtaking Sight Distance and intermediate Sight Distance- Design of Horizontal Alignment- Design of Super elevation and Extra widening- Design of Transition Curves-Design of Vertical alignment-Gradients- Vertical curves. Typical cross sections for different types of roads.

UNIT – IV

UNIT - V
TRAFFIC REGULATION AND MANAGEMENT: Road Traffic Signs – Types and Specifications – Road markings-Need for Road Markings-Types of Road Markings- Design of Traffic Signals –Webster Method –IRC Method, intelligent transportation systems typical architectures.

UNIT - VI
INTERSECTION DESIGN: Types of Intersections – Conflicts at Intersections- Types of At-Grade Intersections- Channelization : Objectives – Traffic Islands and Design criteria-Types of Grade Separated Intersections- Rotary Intersection – Concept of Rotary and Design Criteria- Impacts of Geometrics on intersection with reference safety, Operational capacity.

UNIT – VII
INTRODUCTION TO RAILWAY ENGINEERING: Permanent way components – Cross Section of Permanent Way - Functions of various Components like Rails, Sleepers and Ballast –Rail Fastenings – Creep of Rails- Theories related to creep – Ageing of Sleepers- Sleeper density.

GEOMETRIC DESIGN OF RAILWAY TRACK: Gradients- Grade Compensation- Cant and Negative Super elevation- Cant Deficiency – Degree of Curve – Crossings and Turn outs.

UNIT – VII

TEXT BOOKS:

REFERENCES:
CONSTRUCTION TECHNOLOGY AND PROJECT MANAGEMENT
(OPEN ELECTIVE)

UNIT – I

UNIT – II
Construction Method – Earthwork – Piling – Concrete and Concreting – Form work – Fabrication and Erection.

UNIT – III

UNIT – IV

UNIT – V

UNIT – VI

UNIT – VII

UNIT – VIII

TEXT BOOK

REFERENCES :
URBAN DISASTER – INTELLIGENT CONTROL SYSTEMS
(OPEN ELECTIVE)

UNIT – I
Disasters: Types of disaster, Significant aspects of disasters, economic impact of disasters, Risk aspects, Hazards and disasters.

UNIT – II
Urban Disaster and their environmental impacts: Impact of earthquakes, floods, fires, droughts, land slides, Congestion pollution, accident risk on urban environment policies for remedial measures. Technology to forecast their impact.

UNIT – III
Technology to Track Urban Disasters: Monitoring profile – cameras, sensors and communication systems Engineering profiles – total station, terrestrial scanners, and other survey equipment.

UNIT - IV

UNIT – V
Information systems: Geography information systems – different packages and over view, MIS – Architecture, web enabled communication systems – over view.

UNIT – VI
Intelligent control system: Technology enabled online monitoring system, post evaluation multi criteria systems, forecasting approaches through decision supporting systems.

UNIT-VII

UNIT – VIII
Disasters – case studies on disaster mitigation measures.

REFERENCES & TEXT BOOKS:
2. Sensor Technologies & Date requirement of ITS by Lawrence A. Klein.
3. Disaster mitigation – Experiences and reflections – Pradeep sahni, Alka Dhameja, Uma Medhuri, PHI.
UNIT – I
Introduction to Intellectual property: Introduction, types of intellectual property, international organizations, agencies and treaties, importance of intellectual property rights.

UNIT – II
Trade Marks: Purpose and function of trade marks, acquisition of trade mark rights, protectable matter, selecting and evaluating trade mark, trade mark registration processes.

UNIT – III
Law of copies rights: Fundamental of copy right law, originality of material, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copy right registration, notice of copy right, international copy right law.

UNIT – IV
Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer

UNIT – V
Trade Secrets: Trade secrete law, determination of trade secrete status, liability for misappropriations of trade secrets, protection for submission, trade secrete litigation.

UNIT – VI
Unfair competition: Misappropriation right of publicity, False advertising.

UNIT – VII
New development of intellectual property: new developments in trade mark law; copy right law, patent law, intellectual property audits.

UNIT – VIII
International overview on intellectual property, international – trade mark law, copy right law, international patent law, international development in trade secrets law.

References & Text Books:
1. Intellectual property right, Deborah. E. Bouchoux, cengage learning.
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GEOTECHNICAL ENGINEERING LAB

LIST OF EXPERIMENTS

1. Atterberg’s Limits (LL & PL)
2. Field density-core cutter and sand replacement method
3. Grain size analysis (Sieve and Hydrometer analysis)
4. Permeability of soil, constant and variable head test
5. Compaction test
6. CBR Test
7. Consolidation test
8. Unconfined compression test
9. Tri-axial Compression test
10. Direct shear test.
11. Vane shear test

Note: Any eight experiments may be completed.
ADVANCED ENGLISH COMMUNICATION SKILLS LAB

1. Introduction
The introduction of the English Language Lab is considered essential at 3rd year level. At this stage the students need to prepare themselves for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.

The proposed course should be an integrated theory and lab course to enable students to use ‘good’ English and perform the following:
- Gather ideas and information, to organize ideas relevantly and coherently.
- Engage in debates.
- Participate in group discussions.
- Face interviews.
- Write project/research reports/technical reports.
- Make oral presentations.
- Write formal letters.
- Transfer information from non-verbal to verbal texts and vice versa.
- To take part in social and professional communication.

2. Objectives:
This Lab focuses on using computer-aided multimedia instruction for language development to meet the following targets:
- To improve the students’ fluency in English, through a well-developed vocabulary and enable them to listen to English spoken at normal conversational speed by educated English speakers and respond appropriately in different socio-cultural and professional contexts.
- Further, they would be required to communicate their ideas relevantly and coherently in writing.

3. Syllabus:
The following course content is prescribed for the Advanced Communication Skills Lab:
- **Functional English** - starting a conversation – responding appropriately and relevantly – using the right body language – role play in different situations.
- **Vocabulary Building** – synonyms and antonyms, word roots, one-word substitutes, prefixes and suffixes, study of word origin, analogy, idioms and phrases.
- **Reading Comprehension** – reading for facts, guessing meanings from context, scanning, skimming, inferring meaning, Critical reading.
- **Writing Skills** – structure and presentation of different types of writing – Resume writing / e-correspondence/Technical report writing/Portfolio writing – planning for writing – research abilities/data collection/organizing data/tools/analysis – improving one’s writing.
- **Group Discussion** – dynamics of group discussion, intervention, summarizing, modulation of voice, body language, relevance, fluency and coherence.
- **Presentation Skills** – Oral presentations (individual and group) through JAM sessions/seminars and written presentations through posters/projects/reports/PPTs/e-mails/assignments etc.
- **Interview Skills** – concept and process, pre-interview planning, opening strategies, answering strategies, interview through tele and video-conferencing.

4. Minimum Requirement:
The English Language Lab shall have two parts:
- **i) The Computer aided Language Lab** for 60 students with 60 systems, one master console, LAN facility and English language software for self-study by learners.
- **ii) The Communication Skills Lab** with movable chairs and audio-visual aids with a P.A System, a T. V., a digital stereo – audio & video system and camcorder etc.

**System Requirement ( Hardware component):**
- **Computer network with Lan with minimum 60 multimedia systems with the following specifications:**
  - **iii) P – IV Processor**
    - a) Speed – 2.8 GHZ
    - b) RAM – 512 MB Minimum
  - **c) Hard Disk – 80 GB**
  - iv) Headphones of High quality

5. Suggested Software:
The software consisting of the prescribed topics elaborated above should be procured and used.
Suggested Software:

- Clarity Pronunciation Power – part II
- Oxford Advanced Learner’s Compass, 7th Edition
- DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.
- Lingua TOEFL CBT Insider, by Dreamtech
- TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)
- The following software from ‘train2success.com’
  - Preparing for being Interviewed,
  - Positive Thinking,
  - Interviewing Skills,
  - Telephone Skills,
  - Time Management
  - Team Building,
  - Decision making

- English in Mind, Herbert Puchta and Jeff Stranks with Meredith Levy, Cambridge

Books Recommended:


DISTRIBUTION AND WEIGHTAGE OF MARKS:

*Advanced Communication Skills Lab Practicals:*

1. The practical examinations for the English Language Laboratory practice shall be conducted as per the University norms prescribed for the core engineering practical sessions.
2. For the English Language lab sessions, there shall be a continuous evaluation during the year for 25 sessional marks and 50 End Examination marks. Of the 25 marks, 15 marks shall be awarded for day-to-day work and 10 marks to be awarded by conducting Internal Lab Test(s). The End Examination shall be conducted by the teacher concerned with the help of another member of the staff of the same department of the same institution.
GROUND WATER DEVELOPMENT AND MANAGEMENT
(ELECTIVE-II)

UNIT – I
Ground Water Occurrence: Ground water hydrologic cycle, origin of ground water, rock properties effecting ground water, vertical distribution of ground water, zone of aeration and zone of saturation, geologic formation as Aquifers, types of aquifers, porosity, Specific yield and Specific retention.

UNIT – II
Ground Water Movement: Permeability, Darcy’s law, storage coefficient. Transmissivity, differential equation governing ground water flow in three dimensions derivation, ground water flow equation in polar coordinate system. Ground water flow contours their applications.

UNIT – III
Steady groundwater flow towards a well in confined and unconfined aquifers – Dupuit’s and Theim’s equations, Assumptions, Formation constants, yield of an open well Well interface and well tests – Recuperation Test.

UNIT – IV

UNIT – V

UNIT – VI
Artificial Recharge of Ground Water: Concept of artificial recharge – recharge methods, relative merits, Applications of GIS and Remote Sensing in Artificial Recharge of Ground water along with Case studies.

UNIT – VII
Well Construction – Drilling Equipment used for Well Construction – Bore log – Interpretation of Log Data.

UNIT – VIII

TEXT BOOKS:
2. Groundwater by H.M.Raghunath, Wiley Eastern Ltd.

REFERENCES :
IV Year B.Tech. C.E. I –Sem
6757002

ADVANCED STRUCTURAL DESIGN
(ELECTIVE-II)

UNIT – I
Design and Detailing of Cantilever Types Retaining Walls – Principles of Counterfort Retaining Walls.

UNIT – II
Design of Circular Rectangular Water Tanks.

UNIT – III
Design of Bunkers and Silos.

UNIT – IV
Design of RCC Chimneys

UNIT – V
Design of Concrete Bridges – IRC Loading – Design of Slab Bridge.

UNIT – VI
Design of T-Beam Girder Bridge.

UNIT – VII
Design of Steel Bridges – Loadings – Design of Plate Girder Bridges.

UNIT – VIII
Design of Steel Gantry Girders.

TEXT BOOKS :
1. Advanced Reinforced Concrete Structures by Vargheesh, Pranties Hall of India Pvt. Ltd.

REFERENCES :

Codes : Relevant IS : Codes.
### Elements of Earthquake Engineering (Elective-II)

**Unit I**

**Unit II**

**Unit III**

**Unit IV**
- Introduction to earthquake resistant design: Seismic design requirements-regular and irregular configurations-basic assumptions-design earthquake loads-basic load combinations-permissible stresses-seismic methods of analysis-factors in seismic analysis-equivalent lateral force method.

**Unit V**
- Reinforced Concrete Buildings: Principles of earthquake resistant design of RC members- Structural models for frame buildings- IS code (IS 1893) based methods for seismic design- retrofitting- Vertical irregularities- Plan configuration problems- Determination of design lateral forces-Equivalent lateral force procedure- Lateral distribution of base shear.

**Unit VI**

**Unit VII**

**Unit VIII**

### Text Books:
2. Earthquake Resistant Design of structures – Pankaj Agarwal and Manish Shrikhande, Prentice Hall of India Pvt. Ltd.

### Reference Books:
2. Masory and Timber structures including earthquake Resistant Design –Anand S.Arya, Nem chand & Bros
5. Earthquake Tips – Learning Earthquake Design and Construction C.V.R. Murty

### Reference Codes:
UNIT-I
INTRODUCTION: Concept of watershed development, objectives of watershed development, need for watershed development in India, Integrated and multidisciplinary approach for watershed management.

UNIT-II
CHARACTERISTICS OF WATERSHED: size, shape, physiography, slope, climate, drainage, land use, vegetation, geology and soils, hydrology and hydrogeology, socio-economic characteristics, basic data on watersheds.

UNIT-III

UNIT-IV
PRINCIPLES OF EROSION: Types of erosion, factors affecting erosion, effects of erosion on land fertility and land capability, estimation of soil loss due to erosion, Universal soil loss equation.

MEASURES TO CONTROL EROSION: Contour techniques, ploughing, furrowing, trenching, bunding, terracing, gully control, rockfill dams, brushwood dam, Gabion.

UNIT-V
WATER HARVESTING: Rainwater Harvesting, catchment harvesting, harvesting structures, soil moisture conservation, check dams, artificial recharge, farm ponds, percolation tanks.

UNIT-VI

UNIT-VII
ECOSYSTEM MANAGEMENT: Role of Ecosystem, crop husbandry, soil enrichment, inter, mixed and strip cropping, cropping pattern, sustainable agriculture, bio-mass management, dry land agriculture, Silvi pasture, horticulture, social forestry and afforestation.

UNIT-VIII
Planning of watershed management activities, peoples participation, preparation of action plan, administrative requirements- Reservoir Routing.

TEXT BOOKS:

REFERENCE:
1. Land and Water Management by VVN Murthy, - Kalyani Publications.
2. Irrigation and Water Management by D.K.Majumdar, Printice Hall of India.
GIS AND REMOTE SENSING

UNIT – I
Introduction to Photogrammetry: Principle and types of aerial photographs, stereoscopy, Map Vs Mosaic, ground control, Parallax measurements for height, determinations.

UNIT – II
Remote Sensing – I: Basic concepts and foundation of remote sensing – elements involved in remote sensing, electromagnetic spectrum, remote sensing terminology and units.

UNIT - III
Remote Sensing – II: Energy resources, energy interactions with earth surface features and atmosphere, resolution, sensors and satellite visual interpretation techniques, basic elements, converging evidence, interpretation for terrain evaluation, spectral properties of water bodies, introduction to digital data analysis.

UNIT – IV
Geographic Information System: Introduction, GIS definition and terminology, GIS categories, components of GIS, fundamental operations of GIS, A theoretical framework for GIS.

UNIT – V
Types of data representation: Data collection and input overview, data input and output. Keyboard entry and coordinate geometry procedure, manual digitizing and scanning, Raster GIS, Vector GIS – File management, Spatial data – Layer based GIS, Feature based GIS mapping.

UNIT – VI
GIS Spatial Analysis: Computational Analysis Methods (CAM), Visual Analysis Methods (VAM), Data storage-vector data storage, attribute data storage, overview of the data manipulation and analysis. Integrated analysis of the spatial and attribute data.

UNIT – VII
Water Resources Applications-I: Land use/Land cover in water resources, Surface water mapping and inventory, Rainfall – Runoff relations and runoff potential indices of watersheds, Flood and Drought impact assessment and monitoring, Watershed management for sustainable development and Watershed characteristics.

UNIT – VIII
Water Resources Applications – II: Reservoir sedimentation, Fluvial Geomorphology, water resources management and monitoring, Ground Water Targeting, Identification of sites for artificial Recharge structures, Drainage Morphometry, Inland water quality survey and management, water depth estimation and bathymetry.

TEXT BOOKS:

REFERENCES:
5. Fundamental of GIS by Mechanical designs John Wiley & Sons.
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. I –Sem 6757006

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PAVEMENT DESIGN

UNIT – I

UNIT – II
Stresses In Pavements: Vehicle-Pavement Interaction: Transient, Random & Damping Vibrations, Steady State of Vibration, Experiments on Vibration, Stress Inducing Factors in Flexible and Rigid pavements

UNIT - III

UNIT – IV
Stresses In Rigid Pavements: Westergaard’s Theory and Assumptions, Stresses due to Curling, Stresses and Deflections due to Loading, Frictional Stresses, Stresses in Dowel Bars & Tie Bars

UNIT – V

UNIT - VI

UNIT - VII

UNIT – VIII
Design of Pavement – Pavement design for low volume roads, Rural road designs – code of practices.

REFERENCES:
6. IRC Codes for Flexible and Rigid Pavements design
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. I –Sem

ESTIMATING AND COSTING

UNIT – I
General items of work in Building – Standard Units Principles of working out quantities for detailed and abstract estimates – Approximate method of Estimating

UNIT – II
Detailed Estimates of Buildings.

UNIT – III
Earthwork for roads and canals

UNIT - IV
Rate Analysis – Working out data for various items of work over head and contingent charges.

UNIT - V
Reinforcement bar bending and bar requirement schedules.

UNIT-VI

UNIT – VII
Valuation of buildings.

UNIT - VIII
Standard specifications for different items of building construction.

TEXT BOOKS
2. Estimating and Costing by G.S. Birdie

REFERENCES:
2. I. S. 1200 (Parts I to XXV – 1974/ method of measurement of building and Civil Engineering works – B.I.S.)
3. Estimation, Costing and Specifications by M. Chakraborti; Laxmi publications.
UNIT – I
Introduction: concepts of systems analysis, definition, systems approach to water resources planning and management, role of optimization models, objective function and constraints, types of optimization techniques.

UNIT – II
Linear programming – I: Formulation linear programming models, graphical method, simplex method, application of Linear programming in water resources.

UNIT – III
Linear programming – II: Revised simplex method, duality in linear programming, sensitivity and past optimality analysis.

UNIT – IV
Dynamic programming: Belman’s principles of optimality forward and backward recursive dynamic programming, case of dimensionality, application of dynamic programming for resource allocation.

UNIT – V
Non-linear optimization techniques: Clerical of method optimization, Kuch-Tuclide, gradential based research techniques for simple unconstrained optimization.

UNIT – VI
Simulation: application of simulation techniques in water resources.

UNIT – VII

UNIT – VIII
Water resources management: Planning of reservoir system, optimal operation of single reservoir system, allocation of water resources, optimal cropping pattern, conjunctive use of surface and sub-surface water resources.

TEXT BOOKS:

REFERENCE:
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. I –Sem 6757009

FINITE ELEMENT METHODS
(ELECTIVE-III)

UNIT – I
Introduction to Finite Element Method – Basic Equations in Elasticity - equation – concept of plane stress – plane strain advantages and disadvantages of FEM.

UNIT – II
Element shapes – nodes – nodal degree of freedom – strain displacement relations.

UNIT – III
Finite Element Analysis (FEA) of – one dimensional problems – Bar element – Shape functions stiffness matrix – stress – strain

UNIT – IV
FEA Beam elements – stiffness matrix - shape function – continuous beams.

UNIT – V

UNIT – VI

UNIT – VII
Isoparametric formulation – Concepts of, isoparametric elements for 2D analysis -formulation of CST element, 4 –noded and 8-noded iso-parametric quadrilateral elements.

UNIT-VIII
Solution Techniques: Numerical Integration, Static condensation, assembly of elements and solution techniques for static loads.

TEXT BOOK:
1. Finite element analysis by S.S. Bhavakatti-New age international publishers
3. Finite element method by logan daryl

REFERENCES:
1. Finite element method by chandrupatta, belegunda
2. Finite element analysis by p. seshu, TMH
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(AUTONOMOUS)

IV Year B.Tech. C.E. I –Sem
6757010

DISASTER MANAGEMENT AND MITIGATION
(ELECTIVE-III)

Unit-I

Unit –II
Types of Environmental hazards & Disasters: Natural hazards and Disasters - Man induced hazards & Disasters - Natural Hazards- Planetary Hazards/ Disasters - Extra Planetary Hazards/disasters - Planetary Hazards- Endogenous Hazards - Exogenous Hazards –

Unit –III

Unit –IV


Unit –V
Emerging approaches in Disaster Management- Three Stages
1. Pre- disaster stage (preparedness)
2. Emergency Stage
3. Post Disaster stage-Rehabilitation

Unit –VI
Natural Disaster Reduction & Management
a) Provision of Immediate relief measures to disaster affected people
b) Prediction of Hazards & Disasters
c) Measures of adjustment to natural hazards

Unit –VII
Disaster Management- An integrated approach for disaster preparedness, mitigation & awareness.

Mitigation- Institutions- discuss the work of following Institution.
   a. Meteorological observatory
   b. Seismological observatory
   c. Volcanology institution
   d. Hydrology Laboratory
   e. Industrial Safety inspectorate
   f. Institution of urban & regional planners
   g. Chambers of Architects
   h. Engineering Council
   i. National Standards Committee
Integrated Planning- Contingency management Preparedness –
   a) Education on disasters
   b) Community involvement
   c) The adjustment of Human Population to Natural hazards & disasters Role of Media

Monitoring Management- Discuss the programme of disaster research & mitigation of disaster of following organizations.
   a) International Council for Scientific Unions (ICSU)- Scientific committee on problems of the Environment (SCOPE), International Geosphere-Biosphere programme (IGBP)
   b) World federation of Engineering Organizations(WFED)
   c) National Academy of Sciences
   d) World Meteorological organizations(WMO)
   e) Geographical Information System(GIS)
   f) International Association of Seismology & Physics of Earth’s Interior (IASPEI)
   g) Various U.N agencies like UNCRD, IDNDR, WHO, UNESCO, UNICEF, UNEP.

Unit –VIII
a. A regional survey of Land Subsidence, Coastal Disaster, Cyclonic Disaster & Disaster in Hills with particular reference to India
b. Ecological planning for sustainability & sustainable development in India- Sustainable rural development: A Remedy to Disasters -Role of Panchayats in Disaster mitigations
c. Environmental policies & programmes in India- Institutions & National Centres for Natural Disaster reduction, Environmental Legislations in India, Awareness, Conservation Movement, Education & training

TEXT BOOK:
Disaster Mitigation: Experiences And Reflections by Pardeep Sahni

REFERENCES
1  R.B.Singh (Ed) Environmental Geography, Heritage Publishers New Delhi,1990
2  Savinder Singh Environmental Geography, Prayag Pustak Bhawan, 1997
3  Kates,B.I & White, G.F The Environment as Hazards, oxford, New York, 1978
4  R.B. Singh (Ed) Disaster Management, Rawat Publication, New Delhi, 2000
5  H.K. Gupta (Ed) Disaster Management, Universities Press, India, 2003
6  R.B. Singh, Space Technology for Disaster Mitigation in India (INCED), University of Tokyo, 1994
7  Dr. Satender , Disaster Management in Hills, Concept Publishing Co., New Delhi, 2003
8  A.S. Arya Action Plan For Earthquake,Disaster, Mitigation in V.K. Sharma (Ed) Disaster Management IIPA Publication New Delhi, 1994
9  R.K. Bhandani An overview on Natural & Man made Disaster & their Reduction, CSIR, New Delhi
10  M.C. Gupta Manuals on Natural Disaster management in India, National Centre for Disaster Management, IIPA, New Delhi, 2001
Advanced Foundation Engineering

UNIT – I
Introduction-Bearing capacity of Footings subjected to Eccentric and inclined loading – Meyerhoff’s, Hansen’s, Vesic theories – Foundations on layered soils.

UNIT – II
Elastic settlement of Footings embedded in sands and clays of Infinite thickness – Footings on soils of Finite thickness-Schmertamaunn’s method, Janbu method.

UNIT – III
Pile Foundations – static and dynamic methods-pile groups-negative skin friction-under reamed piles.

UNIT – IV
Settlement of Pile groups resting in sands and clays –laterally loaded piles-ultimate capacity of laterally loaded piles.

UNIT – V
Lateral Earth pressures-Rankine - Coloumb’s and graphical methods – Stability of cantilever and counterfort retaining walls, Reinforced earth retaining walls.

UNIT – VI
Cantilever sheet piles and anchored bulkheads, Earth pressure diagram - Determination of Depth of embedment in sands and clays – Timbering of trenches- Earth pressure diagrams – Forces in struts.

UNIT – VII

UNIT - VIII

TEXT BOOKS:
3. Geotechnical Engineering : Principles and practices of soil mechanics and foundation Engineering by VNS Murthy, Taylor & Francis Group

REFERENCE BOOKS:
I. ROAD AGGREGATES:
1. Aggregate Crushing value
2. Aggregate Impact Test.
4. Attrition Test
5. Abrasion Test.
6. Shape tests

II. BITUMINOUS MATERIALS:
1. Penetration Test.
2. Ductility Test.
3. Softening Point Test.
4. Flash and fire point tests.

III. CEMENT AND CONCRETES:
TESTS ON CEMENTS:
1. Normal Consistency of fineness of cement.
2. Initial setting time and final setting time of cement.
3. Specific gravity and soundness of cement.
5. Workability test on concrete by compaction factor, slump and Vee-bee.
7. Bulking of sand.
8. Non-Destructive testing on concrete (for demonstration)
LIST OF EXPERIMENTS
1. Determination of pH and Turbidity
2. Determination of Conductivity and Total dissolved solids (Organic and Inorganic)
3. Determination of Alkalinity/Acidity.
4. Determination of Chlorides.
5. Determination of iron.
7. Determination of Nitrates.
8. Determination of Optimum dose of coagulant
9. Determination of Chlorine demand
10. Determination of total Phosphorous.
11. Determination of B.O.D
12. Determination of C.O.D
15. Presumptive coliform test.

NOTE: At least 8 of the above experiments are to be conducted.
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. II –Sem
6758001

GROUND IMPROVEMENT TECHNIQUES
(ELECTIVE-IV)

UNIT – I
Dewatering: methods of de-watering- sumps and interceptor ditches- single, multi stage well points - vacuum well points- Horizontal wells- foundation drains-blanket drains- criteria for selection of fill material around drains – Electro-osmosis.

UNIT –II
Grouting: Objectives of grouting- grouts and their properties- grouting methods- ascending, descending and stage grouting- hydraulic fracturing in soils and rocks- post grout test.

UNIT – III
In – situ densification methods in granular Soils:– Vibration at the ground surface, Impact at the Ground Surface, Vibration at depth, Impact at depth.

UNIT - IV
In – situ densification methods in Cohesive soils:– preloading or dewatering, Vertical drains – Sand Drains, Sand wick geodrains – Stone and lime columns – thermal methods.

UNIT – V

UNIT – VI
Geosynthetics : Description, properties, functions and applications of geosynthetics

UNIT – VII
Geoenvironmental application of geosynthetics : Geomembranes for landfills and ponds, Geosynthetic clay liner, Designing with GCL:s, Filtration, Erosion control, slope protection.

UNIT – VIII
Stabilization: Methods of stabilization-mechanical-cement- lime-bituminous-chemical stabilization with calcium chloride, sodium silicate and gypsum.

TEXT BOOKS:

REFERENCES:
2. Xanthakos P.P, Abramson, L.W and Brucwe, D.A (1994) Ground Control and Improvement, John Wiley and Sons,
   New York, USA.
3. Robert M. Koerner, Designing with Geosynthetics, Prentice Hall New Jercy, USA
DESIGN AND DRAWING OF IRRIGATION STRUCTURES
(ELECTIVE-IV)

Design and drawing of the following hydraulic structures.

Group A
1. Surplus weir.
2. Syphon Well Drop
3. Trapezoidal notch fall.
4. Tank sluice with tower head

Group B
1. Sloping glacis weir.
2. Canal regulator
4. Type III Syphon aqueduct

Final Examination pattern:
The Question paper is divided into two parts with two questions in each part. The student has to answer ONE question from each part. Part I should cover the designs and drawings from Group A for 45 marks and Part II should cover only designs from group B carrying 30 marks.

The duration of examination will be FOUR hours.

However, the students are supposed to practise the drawings for Group B structures also for internal evaluation.

TEXT BOOKS:
AIRPORT PLANNING AND DESIGN
(ELECTIVE-IV)

UNIT – I The Air Transportation Systems
1. Introduction and history
2. Air transport and the national economy
3. Growth of air transport and future trends
4. Aviation organizations and their functions

UNIT - II Components of Air Transportation
1. Airports and airways
2. Airlines and air passengers
3. Operating environment

UNIT - III Airport Planning
1. Types of airport planning studies
2. Forecasting in aviation and airport planning

UNIT – IV Airport Configuration
1. Runway configurations
2. Taxiway configurations

UNIT – V
1. Introduction of Airport configurations
2. Analysis of wind
3. Site selection approach

UNIT - VI Planning and Design of the Terminal Area
1. The passenger terminal system
2. The terminal planning process
3. The apron-gate system

UNIT - VII Airport Space Traffic Control
1. Airways
2. Navigation aids

UNIT – VIII
1. Air Traffic Control
2. Air traffic control facilities
3. Air safety & Regulation issues

TEXT BOOK
1 Khanna S K, Arora M G and Jain S S, Airport Planning and Design, Nemchand and Brothers, Roorkee, 1994.

REFERENCES
PRE STRESSED CONCRETE STRUCTURES
(ELECTIVE-IV)

UNIT – I
INTRODUCTION: Historic development – General principles of prestressing pretensioning and post tensioning – Advantages and limitations of prestressed concrete – Materials – High strength concrete and high tensile steel their characteristics.

UNIT – II
I.S.Code provisions, Methods and Systems of Prestressing; Pre-tensioning and post tensioning methods – Analysis of post tensioning - Different systems of prestressing like Hoyer System, Magnel System Freyssinet system and Gifford – Udall System.

UNIT – III
LOSES OF PRESTRESS: Loss of prestress in pre-tensioned and post-tensioned members due to various causes like elastic shortage of concrete, shrinkage of concrete, creep of concrete, Relaxation of steel, slip in anchorage bending of member and frictional losses.

UNIT – IV
Analysis of sections for flexure; Elastic analysis of concrete beams prestressed with straight, concentric, eccentric, bent and parabolic tendons.

UNIT – V
DESIGN OF SECTIONS FOR FLEXURE AND SHEAR: Allowable stress, Design criteria as per I.S.Code – Elastic design of simple rectangular and I-section for flexure, shear, and principal stresses – design for shear in beams – Kern – lines, cable profile.

UNIT – VI
ANALYSIS OF END BLOCKS; by Guyon’s method and Mugnel method, Anchorage zone strusses – Approximate method of design – Anchorage zone reinforcement – Transfer of prestress pre-tensioned members.

UNIT – VII

UNIT – VIII
DEFLECTIONS OF PRESTRESSED CONCRETE BEAMS: Importance of control of deflections – factors influencing deflections – short term deflections of uncracked members prediction of long term deflections.

TEXT BOOKS:
2. Prestressed Concrete by N.Rajasekharan; - Narosa publications.

REFERENCE:
1. Prestressed Concrete by Ramamrutham; Dhanpatrai Publications.

Codes: BIS code on prestressed concrete, IS 1343.
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. II –Sem

6758005

DATA BASE MANAGEMENT SYSTEMS
(ELECTIVE-IV)

UNIT I:

UNIT II:
History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT III:

UNIT IV:
Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity’s – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT V:

UNIT VI:

UNIT VII:

UNIT VIII:

TEXT BOOKS :

REFERENCES :
3. Introduction to Database Systems, C.J.Date Pearson Education
4. Oracle for Professionals, The X Team,S.Shah and V.Shah,SPD.
5. Database Systems Using Oracle:A Simplified guide to SQL and PL/SQL,Shah,PHI.
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. II –Sem
6758006

REHABILITATION AND RETROFITING OF STRUCTURES
(ELECTIVE-IV)

UNIT – I

UNIT – II
Mechanism of Damage – Types of Damage.

UNIT – III
Corrosion of Steel Reinforcement – Causes – Mechanism and Prevention.

UNIT – IV
Damage of Structures due to Fire – Fire Rating of Structures – Phenomena of Desication.

UNIT – V
Inspection and Testing – Symptoms and Diagnosis of Distress - Damage assessment – NDT.

UNIT – VI

UNIT – VII

UNIT – VIII
Health Monitoring of Structures – Use of Sensors – Building Instrumentation.

TEXT BOOKS:

REFERENCE
1. Concrete Technology by A.R. Shantakumar, Oxford University press
3. Non-Destructive Evaluation of Concrete Structures by Bungey
J.B.INSTITUTE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)

IV Year B.Tech. C.E. II –Sem
6758007

MANAGEMENT SCIENCE

Unit I

Unit II
Designing Organisational Structures: Departmentation and Decentralisation, Types of Organisation structures - Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure and their merits, demerits and suitability.

Unit III
Operations Management: Principles and Types of Plant Layout-Methods of production (Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement-Statistical Quality Control: \( \bar{X} \), R chart, c chart, p chart, (simple Problems), Acceptance Sampling, Deming’s contribution to quality.

Unit IV
A) Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records - Supply Chain Management

Unit V

Unit VI
Project Management (PERT/CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (simple problems)

Unit VII

Unit VIII

TEXT BOOK:
1. Aryasri: Management Science, TMH, New Delhi, 2009

REFERENCE BOOKS:
1. Stonier, Management, Pearson, 2009

Pre-requisites: Managerial Economics
Objective: To familiarize with the process of management and to provide basic insights into select contemporary management practices.

Codes/Tables: Normal Distribution Function Table need to be permitted into the examination Hall.

Question Paper Pattern: 5 Questions to be answered out of 8 questions. The question paper should contain atleast 2 practical problems, one each from units - III & VI
Each question should not have more than 3 bits.

Unit VIII will have only short questions, not essay questions.
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