UNIT – 1.

1.1 Introduction

Definition of construction management – Need for construction management – Scope of construction management.

1.2 Building Economics

Definition – Factors; design factors; shape of building; Circulation space, Structural form, Prefabrication (Modular Co-ordination), Site utilization, Coverage, Density of development, Effect of contours, Maintenance consideration.

1.3 Integrated Management System

Need – Typical network format of precontract planning, Land development for building construction, Check list for information flow of drawing, Material management chart, Construction program for Mass housing – Classification of construction work, Light, Heavy and industrial.

1.4 Planning of Civil Engg Project


1.5 Organisation Structure of Construction Department


UNIT – 2

2.1 Resource Management


2.2 Application of Network techniques

Unit 3

3.1 Tenders and Tender Documents:

3.2 Contracts:

3.3 Departmental Execution of works:

3.4 Supervision and Quality control:

Unit 4

4.1 Measurement and Quality control:
- Measurement books – Recording of measurements – Check measurement – Pre-measurement – unit of measurement of work

4.2 Bills

4.3 Stores

Unit 5

12 Hours
5.1 Entrepreneurship

Definition and concept – role and significance – Risks and awards – profile and requirement of an entrepreneur development – Need for coordinated efforts – Follow up and institutional support needed – Programmes Existing in India – SISI, DIC, TIIC, SIDCO - Assistance programs to entrepreneurs small business enterprises – forms of business enterprises – sole proprietorship – partnership – private limited company – public limited company – cooperative – state enterprises (Definition only)

5.2 Finance


Revision and Test

5 Hours

Reference Books :

- Construction Management - S. Sanga reddy & P.L. Meiyappan, DOTE publications
- PERT and CPM principles and applications - East west publications, Delhi
UNIT-1

1.1 QUANTITY OF WATER

Water supply-need for protected water supply-importance of public water supply schemes-demand-types of demand-domestic demand, industrial and commercial demand, demand for public uses, fire demand, demand for compensating various losses-per capita demand-design period-methods of forecasting population-problems in arithmetical increase method geometrical increase method, incremental increase method-total quantity of water required for villages /towns-sources of water-surface and sub surface sources-selection of suitable source for a water supply scheme-sanitary protection of wells.

1.2 COLLECTIONS AND CONVEYANCE OF WATER


UNIT-2

2.1 QUALITY OF WATER

Impurities in water-Sources, causes and effects of different types of impurities-Tests on water-Physical, Chemical and Bacteriological tests-Significance of various tests conducted on water-Sampling of water-standards laid down by B.I.S.I for drinking water-W.H.O standards-Maintenance of purity of water- water borne diseases and their causes.

2.2 TREATMENT OF WATER


UNIT -3

3.1 DISTRIBUTION SYSTEM

Different systems of supplying water-Gravity system, pumping system and combined system-continuous and intermittent supply of water-comparison -Different layouts of distribution systems-Dead end, Grid iron, Radial and Circular systems-Merits, demerits and suitability of different layout systems-Service reservoirs-Underground and over head tanks

3.2 APPURTENANCES AND MAINTENANCE OF WATER LINES

Service lines to houses-Diagrammatic sketch showing the connection of service line to street line - Different water supply fittings used in buildings and their uses - Appurtenances used in the distribution system - Sluice valves, Check valves, Air valves, Scour valves, Fire hydrants and Water meters - wastage of water-detection methods - Preventive measures – Maintenance of distribution system.
UNIT-4

4.1 COLLECTIONS AND CONVEYANCE OF SEWAGE 10 Hours


4.2 TREATMENTS AND DISPOSAL 10 Hours


UNIT-5

5.1 ENVIRONMENTAL POLLUTION AND CONTROL 10 Hours

Environment – Definition – Water Pollution - Sources of water pollution - Effects and prevention of water pollution.


Land Pollution - Sources of Land Pollution - Effects and prevention of Land Pollution - Pollution impact on land due to non-biodegradable waste matters (Polythene bags, P.V.C. & other plastic materials, Glass, etc..) - Remedial measures.

Air Pollution – Classification of Air Pollutants - Sources - Natural and Man made sources - Effects of Air Pollution on human beings, animals, plants and materials – Control of Air Pollution - At sources - Equipment control – Different Equipments to control Air Pollution - Settling chambers, Cyclone filters, Scrubbers and Electrostatic precipitators - Green House effect - Ozone layer depletion – Acid Rain – Environmental Legislations.

5.2 INDUSTRIAL WASTE WATER TREATMENT AND SOLIDWASTE DISPOSAL 8 Hours


Revision and Test 8 Hours
REFERENCE BOOKS:

1. WATER SUPPLY AND SANITARY ENGINEERING (Including Environmental Engineering)  
   By G.S.BIRDIE

2. FUNDAMENTALS OF WATER SUPPLY AND SANITARY ENGINEERING  
   By S.C.RANGWAL & K.S. RANGWALA

3. WATER SUPPLY ENGINEERING  
   By SANTHOSH KUMAR GARG

4. SANITARY ENGINEERING  
   By SANTHOSH KUMAR GARG

5. ENVIRONMENTAL ENGINEERING TEXT BOOK  
   Prepared by TTTI-TARAMANI, CHENNAI.

6. INDUSTRIAL WASTE WATER TREATMENT  
   By RAO & DUTTA

7. INDUSTRIAL WATER POLLUTION, ORIGIN CHARACTERISTICS AND TREATMENT  
   By N.L. NEMEROW

8. AIR POLLUTION  
   By, M.N. RAO & H.V. RAO
UNIT-1.  

1.1. Introduction:

Definition-Necessity-Methods of Irrigation-Free Flooding, Border Flooding, Check Flooding, Basin Flooding, Furrow Flooding, Sprinkler Flooding – Types of Irrigation – Direct - River / Canal irrigation Storage or Valley Irrigation –Sub soil or Lift Irrigation – Advantages of Irrigation – Development of Irrigation in India.

1.2. Crops and Duty of Water

Cropping seasons-Rabi&Kharif; Types of Crops – Rabi& Kharif; Cash crops, dry crop, wet crop – Definition of - Duty, Delta, Crop period, Base period-Factors affecting duty – Importance of duty- Relation between duty and delta- Problems.

1.3. Hydrology


UNIT-2.

2.1. Storage Works


2.2. Gravity Dams


2.3. Earth Dams

Types – Homogeneous, Non homogeneous, Diaphram –Puddle core wall, Masonry core wall – sketches – causes of Failures.
UNIT-3

3.1. Spillways, Gates & Sluices

- Definition: functions of Spillways – Types – Over fall, Saddle, emergency, spillway; profile of over fall spillway (Ogee crest)- Saddle spillway- Emergency spillway – Breaching section – Profiles.

- Spillway gates: fixed Roller gate – Radial gate.

- Sluices: Tower head and Wing wall type.

3.2. Diversion Works


UNIT-4

4.1. Distribution Works


4.2. Lining of Irrigation Canals


UNIT-5

5.1. River Training Works

5.2. Cross Drainage Works

Definition – Necessity – Aqueduct and siphon aqueduct- Super passage and siphon super passage – level crossing – Inlet and Outlets- Selection of a suitable type of cross drainage works – types of Aqueducts and syphon aqueducts.

5.3. Well/Lift Irrigation


REVISION AND TEST                                      9 Hours

REFERENCE BOOKS

1. Irrigation Engg. - V.P. Sundaram, DTE Publication
2. Irrigation Engg - Priyani
3. Irrigation Engg. - Shahane & Iyengar
4. Irrigation Engg. - Punmia.
5. Irrigation Engg. – N.N. Basak
6. Fundamentals of Irrigation Engg. - Bharat Singh
8. Irrigation Engg Manual - Col. Ellis
UNIT – 1 :

TOWN PLANNING PRINCIPLES

16 Hours


UNIT – 2 :

ROAD AND STREET PLANNING

17 Hours

Planning principles and Techniques – Objectives of – Road, Street ; - types - Classification of Street Systems – Road Junction – parking – Road and street layout including details of road junction.

Traffic Management – Street lighting - Regional Road and Arterial Road – Subarterial road – local streets – Off street parking spaces- foot path – cycle tracks.

Plantation of Shrubs, Trees and Greenery - norms for planning of shrubs and trees –types of plants –distance between trees Effects of plant on environmental protection.

UNIT - 3 :

HOUSING

18 Hours


Planning of Landscape Architecture for Residential areas – Salient features.

UNIT - 4 :

ECONOMY, SOCIETY, ENVIRONMENT AND TRANSPORT POLICY AND PLANNING

18 Hours

Production of the Built Environment - relationships between economy, society and the built environment - relationships and conflicts between developers, planners, architects, designers and builders.

Transport Policy and Planning - ranges over the technical problems involved in transport analysis and planning -need to travel, patterns of trip-making and modes of travel and the policy issues surrounding transport.
UNIT - 5:

TOWN PLANNING RULES, BUILDING BYE-LAWS & DEVELOPMENT CONTROL RULES


Revision & Test

11 Hours

Reference Books:

1. National Building Code of India- Part-III.
2. Municipal and Panchayat bye-laws
3. CMDA rules
4. Corporation bye-laws
5. Town planning - SC. Rangwala
6. Urban and regional planning – KA. Ramegowda, University of Mysore
7. The urban pattern, city planning and design – M/s DVan
8. Time saver standards for site planning – Mc Graw Hill Book company
9. An Introduction to town and country planning – John Rate life London
10. The art of home land scapping – Mc Graw Hill Book company
Objective: Design with the help of Design AIDS to IS 456 – 2000

Unit 1

Unit 2
Columns – Short column – Design of columns – Axially loaded & Uniaxial bending – Determination of area of reinforcement using design AIDS. Column footings – Square & rectangular footings – Design of footings - Determination of reinforcement using design AIDS.

Unit 3

Unit 4
R.C.C Retaining walls - Retaining walls 'T' shaped – with or without shear key - Retaining walls with level back fill – Design of base slab – stem - curtailment details - Determination of reinforcement using design AIDS

Unit 5
Water Tanks – Introduction – permissible stresses in steel minimum reinforcement - Minimum cover design of circular tank with flexible base – Design of circular tank with fixed base at base & free at top ( IS code method IS -370 part IV – 1967) Design of rectangular tanks (Length to breadth ratio less than 2).

Revision & Test

Total Hours: 98
**Reference Books:**

1. I S 456-2000
2. I S 875
3. SP 16 & SP 24
4. I S 800 -1984
5. Limit state design by Dr. Ramachandra
6. Design of reinforced concrete structures by P. Dayaratnam
7. Concrete structures by Vazirani & Ratwani
8. Design of reinforce concrete structures by Dr. K.T. Krishnasamy
10. Limit state Design by Karve.
11. Limit state Design by P C Varghese
12. Limit State Design by Syal and Goel
13. Reinforced Cement concrete by Park and Pauley
14. Reinforced Cement concrete by Mallick and Rangasamy
15. Reinforced Cement concrete by Sinha and Roy
1. Collection of Water Samples from Sources and "Estimation of Residual Chlorine" by Colour Comparison method.


3. Determination of Turbidity of water by "Jackson Candle Turbidity meter".

4. Determination of settleable solids present in the given sample of water/wastewater by "Imhoff Cone".

5. Determination of Total solids present in the given sample of water/wastewater.

6. Determination of "Total Hardness" present in the given sample of water by EDTA Titration method.

7. Determination of "Temporary & Permanent Hardness" present in the given sample of water by EDTA Titration method.

8. Estimation of chlorides in the given sample of water by Silver Nitrate Titration method.

PLUMBING WORKS LAB

9. Study of pipefitting used in water supply (with actual models displayed on board)

10. Study of Sanitary Wares (with actual models displayed on board).


12. Making a bathroom connection from an existing water supply main (making Indents, drawing a neat sketch of the connection with details).

13. Making Suction and Delivery pipe connections to a centrifugal pump (making Indents, drawing a neat sketch of the connection with details).

14. Study of Air Pollution Control Equipments (Gravity Settling Chamber, Cyclone filter with models/devices).
1. Slump test on concrete
2. Compaction factor test on concrete
3. Casting of concrete cube and compression test on concrete cube
4. Fineness modulus of fine and coarse aggregate
5. Bulking characteristics of sand
6. Laying of brick wall corners, T-junction, pillars in English bond
7. Demonstration and practice in painting, varnishing and polishing
8. Cutting, Hooking, cranking and arrangement of reinforcement
   a. Beam
   b. Lintel and Sunshade
   c. Column and footing.
10. Entering measurement for building works
    All the students should enter directly on measurement book and they should keep
    the entry for the following works independently in the measurement book including
    schedule rates for the respective work for the current year.
    Exercise from existing buildings inside the campus and only single room for each
    student.
    a. Measurement and abstract for flooring work
    b. Measurement and abstract for Brick work
    c. Measurement and abstract for colour washing
11. Pre – measurement for steel work
    The following models should be prepared in the laboratory, students should take out
    measurement from the model, they should enter the measurement in the measurement
    book and the total quantity of steel required in kg for each item may be arrived.
    a. One way slab-size – 2.0 m x 2.0 m
       Main rod - 8 mm dia. - 15 nos.
       Distributor - 6 mm dia - 12 nos.
    b. Column and footing
       Footing – size – 1.0 m x 1.0 m – 10 mm dia 5 nos. each direction
       Column – size – 150 mm x 150 mm – 4 nos. 10 mm dia
    c. Beam – size – 230 mm x 300 mm – Length – 2.0 m
       Bottom rod – 12 mm – 3 nos.
       Top rod – 10 mm – 2 nos.
       Stirrups – 6 mm – 14 nos.
LIST OF SUGGESTED PROJECTS

COMPARATIVE STUDY:

- The properties of different types / brands of Cement available
- Different types of Staircases
- The cost of different types of trusses for different Spans
- The cost and construction procedures of trusses with angles and tubes

ADMIIXTURES:

- Economy of using flyash in concrete

MIX DESIGN:

- Comparative study of mix design by different methods

R.C.C. CASTING:

- Demonstration models showing reinforcement details – Comparison of different types of Slab/Beams

PAPER PROJECTS:

PLANNING, DESIGN AND COST ANALYSIS OF

- Residential Houses
- Primary Health Centre
- School Buildings
- Guest House
- Panchayat Union Office Building
- Bank Building
- Post Office Building
- College Building
- Hospital Buildings
- Hotel Buildings
- Hostel Buildings
- Factory Building
- Auditorium
- Way side Railway Station
- Shopping Centre
- Community Hall
- Theatre
- Market Building
- Multistoried Car Park
- Rural Bus Stand
- Stadium
- Swimming Pool
- Over head tank for a village
- New village road with culvert
- Culvert
- Small Bridge
- Plate Girder Bridge
- Septic Tank for a colony

**SPECIAL TYPES OF CONCRETE CONSTRUCTION**

- Bamboo as a reinforcing material
- Ferro cement products – Water tanks, Septic tank

**PRECAST CONSTRUCTION**

- Precasting of R.C.C. Door and window frames
- Precasting of Brick – Concrete beams
- Precasting of different shapes of roof slabs

**MISCELLANEOUS**

- Foundations for light building on expansive soils
- Study of the reduction of swelling behaviour of black cotton soil by stabilization
- Soil cement blocks – relative study

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**Scheme of Examination**

Report Writing : 30 Marks
Ten short Questions : 20 Marks
Internal Assessment : 25 Marks
Viva – Voce : 25 Marks

**Total** : 100 Marks

*Note*: External Examiner should prepare suitable common question paper by referring all projects done by the students.
## ALLOCATION OF MARKS / QUESTION / STUDENT

### A) SURVEYING PRACTICE I, II

<table>
<thead>
<tr>
<th>Sl.No:</th>
<th>Description</th>
<th>Practice I</th>
<th>Practice II</th>
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<td>30 25</td>
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<td>1.</td>
<td>Procedure, Handling Tools/Instruments</td>
<td>5</td>
<td>5 5</td>
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<td>2.</td>
<td>Tabular form, Observations.</td>
<td>8</td>
<td>7 5</td>
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<tr>
<td>3.</td>
<td>Field works/Calculations &amp; Check/drawings.</td>
<td>22</td>
<td>15 13</td>
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<td>4.</td>
<td>Accuracy of result</td>
<td>5</td>
<td>3 2</td>
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<td>5.</td>
<td>Viva-voce</td>
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<td>6.</td>
<td>Camp file</td>
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### B) COMPUTER LAB PRACTICE.

1. CAD in civil Engineering Drawing Practice.
2. Computer application in civil Engineering.

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<tr>
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<th>Description</th>
<th>Max. marks for 1 / 2</th>
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<tbody>
<tr>
<td>1.</td>
<td>Preparation /collection of data/freehand drawing/commands</td>
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<td>2.</td>
<td>Programming &amp; Execution</td>
<td>25</td>
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<td>3.</td>
<td>Output /Work done</td>
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<td>4.</td>
<td>Finishing</td>
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<td>Viva-voce</td>
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<td>Record</td>
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<td><strong>Total (1 to 6)</strong></td>
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### C) FOR ALL OTHER PRACTICAL SUBJECTS.
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<th>Full question (70)</th>
<th>Part A (40)</th>
<th>Part B (30)</th>
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<td>Procedure and handling equipments/tools</td>
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<tr>
<td>2.</td>
<td>Tabular form and observation</td>
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<td>3.</td>
<td>Equations, calculations &amp; graph/Drawings</td>
<td>40</td>
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<td>4.</td>
<td>Accuracy of result</td>
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<td>5.</td>
<td>Viva-voce</td>
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**Note:** Minimum % marks for pass in each practical subjects = 50%