

N.C.College of Engineering

Israna-132107 (Panipat)



Scheme and Syllabus

2016-17

Civil Engineering

Fourth Year (7th & 8th Semester)

MARKS DISTRIBUTION (ACCORDING TO AUTONOMY)

FOR ALL THEORY COURSES: -

1. On semester evaluation of all theory courses total: 100 marks

Distribution

I. Mid semester exam:	20 marks
II. Mid semester exam:	20 marks
Continues Evaluation Test (CET):	20 marks
Attendance:	20 marks
Teacher's assessment:	20 marks

- 2) End semester (final examination) of all theory courses

Total: 100 marks

- 3) Total of on semester + end semester evaluation

is of : 200 marks

- 4) To pass a theory course student should obtain

Minimum: - 40 marks in on semester evaluation.

: - 35 marks in end semester evaluation.

Total: - 80 marks out of 200.

Criterion for passing and failing the theory course: -

- a) If students fails in on semester evaluation despite passing in aggregate one will have to repeat that course.
- b) If student pass in on semester evaluation but fails in end semester exam he/ she will be permitted to appear in supplementary examination.
- c) If student is pass both in on semester evaluation and end semester evaluation but fails in total then he/ she would have to appear in supplementary exam.
- d) If attendance in a course is below 75%, the student shall not be permitted to appear in the End- Semester Examination.

FOR ALL PRACTICAL (LABORATORY) COURSES: -

I) On semester evaluation of all practical (laboratory) courses would be of total: 120 marks.

Distribution

Performance of class practical:	60 marks
Reports of practical:	60 marks

II) End semester evaluation (final lab exam + oral or viva test)

Total: 80 marks

III) Total of on semester evaluation final lab examination + end semester evaluation is of : 200 marks

IV) To pass a lab course student should obtain

Minimum: - 48 marks in on semester evaluation.

28 marks in end semester evaluation.

Total- 80 marks out of -200

Criterion for passing and failing the lab course is just like theory course.

CALCULATION OF SEMESTER GRADE POINT AVERAGE: -

Semester grade point average (SGPA) is the weighted average of the grade for the subjects registered in a Semester and is computed as follows:

$$SGPA = \frac{\sum_i C_i \times G_i}{\sum_i C_i}$$

C_i denotes the Credits (or Units) assigned to the i th subject and G_i denotes the Grade Point Equivalent to the Letter Grade obtained for the i th subject.

Cumulative Grade Point Average (CGPA) is the weighted average of the grades of the subjects for the registered in the semester.

N. C. COLLEGE OF ENGINEERING, ISRANA

SCHEME OF STUDIES AND EXAMINATION

B.Tech. –CIVIL ENGINEERING

4th Year (Semester–VII) 2015

Sr. No.	Subject Code	Subject	BOS	Teaching Schedule			Contact Hours	Credit
				L	T	P		
1	CE-471	Design of Concrete Structures-II	CIVIL	3	1	-	4	4
2	CE-472	Transportation Engg. II	CIVIL	3	-	-	3	3
3	CE-473	Sewerage and Sewage Treatment	CIVIL	3	1	-	4	4
4	CE-474	Energy Efficient Buildings	CIVIL	3	1	-	4	4
5	CE-475	Railway and Airport Engineering	CIVIL	3	1	-	4	4
6		Departmental Elective	CIVIL	3	1		4	4
7	CE-47P1	Irrigation Engg.Design & Drawing	CIVIL	-	-	2	2	1
8	CE-47P2	Software Based Structural Analysis Lab	CIVIL	-	-	2	2	1
6	CE-47P3	Project	CIVIL	-	-	4	4	2
10	CE-47P4	Transportation Engineering - II Lab	CIVIL	-	-	2	2	1
11	CE-443	Industrial Training & Seminar	CIVIL	-	-	-	-	2
Total				18	5	10	33	30

List of Departmental Electives:

1. CE-47E1 Concrete Technology
2. CE-47E2 River Mechanics & Flood Control
3. CE-47E3 Elements of Earthquake Engineering
4. CE-47E4 Energy Resources & Technology

N. C. COLLEGE OF ENGINEERING, ISRANA

SCHEME OF STUDIES AND EXAMINATION

B.Tech. –CIVIL ENGINEERING

4th Year (Semester–VIII) 2015

Sr. No.	Subject Code	Subject	BOS	Teaching Schedule			Contact Hours	Credit
				L	T	P		
1	CE-481	Bridge Engineering	CIVIL	3	1	-	4	4
2	CE-482	Industrial Waste Management	CIVIL	3	1	-	4	4
3	CE-483	General Proficiency & Fitness	CIVIL	-	-	-	-	2
4		Elective-I	CIVIL	3	1	-	4	4
5		Elective-II	CIVIL/MGT.	3	1	-	4	4
6	CE-48P1	Environment Engineering - II Lab	CIVIL	-	-	2	2	1
7	CE-48P2	Project	CIVIL	-	-	6	6	6
8	CE-48P3	Estimation & Accounts	CIVIL	-	-	2	2	1
9	CE-48P4	Seminar	CIVIL	-	-	2	2	1
TOTAL				12	4	12	28	27

List of Departmental Electives:

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. CE-48E1 Ground Water Engineering 2. CE-48E2 Environmental Impact Assessment 3. CE-48E3 Design of Hydraulic Structures 4. CE-48E4 Pre Stressed Concrete | <ol style="list-style-type: none"> 5. CE-48E5 Software Based Construction Management 6. CE-48E7 Machine Foundations 7. CE-48E8 Road Safety & Audit 8. MGT 481 Basics of Management |
|--|--|

Open Electives

1. MGT48OE-1 Technopreneurship

7th Semester (Civil Engineering)
DESIGN OF CONCRETE STRUCTURES-II
CE-471

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3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Continuous Beams: Basic assumptions, Moment of inertia, settlements, Modification of moments, maximum moments and shear, beams curved in plan-analysis for torsion, redistribution of moments for single and multi-span beams, design examples.

Prestressed Concrete: Basic principles, classification of prestressed members, various prestressing systems, losses in prestress, initial and final stress conditions, analysis and design of sections for flexure and shear, load balancing concept, I:S: Specifications.

UNIT-II

Flat slabs and staircases:

Advantages of flat slabs, general design consideration, approximate direct design method, design of flat slabs, openings in flat slab, design of various types of staircases, design examples.

Foundations: Combined footings, raft foundation, design of pile cap and piles, under-reamed piles, design examples.

UNIT-III

Water Tanks, Silos and Bunkers:

General design requirements, rectangular and cylindrical underground and overhead tanks, Intze tanks, design considerations, design examples.

Silos and Bunkers-Variou theories, Bunkers with sloping bottoms and with high side walls, battery of bunkers, design examples.

UNIT-IV

Building Frames:

Introduction, Member stiffnesses, Loads, Analysis for vertical and lateral loads, Torsion in buildings, Ductility of beams, design and detailing for ductility, design examples.

Yield Line Theory:

Basic assumptions, Methods, of analysis, yield line patterns and failure mechanisms, analysis of one way and two way rectangular and non-rectangular slabs, effect of top corner steel in square slabs, design examples.

Preparing drawing sheets showing reinforcement details in case of:

1. Flat slabs.
2. Combined Footings, Pile Foundations, Raft foundation.
3. T-Beam Bridge.

Books:

1. Pre-Stressed Concrete, N.Krishna Raju, TMH Pub., N.Delhi.
2. Design of Prestressed Concrete Structures, T. Y. Lin, John Wiley & Sons., N.Delhi.
3. Comprehensive Reinforced Concrete Design, B.C. Punmia & Jain.
4. Reinforced Concrete – Limit State Design, A.K.Jain, Nem Chand & Bros., Roorkee.
5. IS 1343-1980, IS Code of Practice for Prestressed Concrete.

7th Semester (Civil Engineering)
TRANSPORTATION ENGG. –II
CE-472

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On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Design of Flexible Pavements: Types of pavements, Flexible and rigid pavements, Components of a pavement and their functions, Factors affecting design of pavements, Design of thickness of a flexible pavement by Group Index method, CBR method (including latest IRC guidelines), Triaxial method and Burmister's method.

Design of Rigid Pavements: Westergaard's theory, critical locations of loading, load and temperature stresses Critical combination of stresses, IRC guidelines for determination of thickness of a rigid pavement, joints: requirements, types, patterns, Spacing of expansion and contraction joints, Functions of dowel and tie bars.

UNIT-II

Highway Construction: Non-Bituminous Pavements: Brief introduction to earthwork machinery: shovel, hoe clamshell, dragline, bulldozers, Principles of field compaction of subgrade. Compacting equipments. Granular roads. Construction steps of WBM. WMM. Construction of cement concrete pavements. Slip – form pavers. Basic concepts of the following: soil stabilized roads, use of geo-synthetics, reinforced cement concrete pavements, prestress concrete pavements, roller compacted concrete pavements and fibre reinforced concrete pavements.

Construction of Bituminous Pavements: Various types of bituminous construction. Prime coat, tack coat, seal coat and surface dressing. Construction of BUSG, Premix carpet, BM, DBM and AC. Brief Coverage of machinery for construction of bituminous roads: bitumen boiler, sprayer, pressure distributor, hot-mix plant, cold-mix plant, tipper trucks, mechanical paver or finisher, rollers. Mastic asphalt. Introduction to various IRC and MOST specifications.

UNIT-III

Highway Maintenance: Pavement failures. Maintenance operations. Maintenance of WBM, bituminous surfaces and cement concrete pavements. Pavement evaluation. Benkleman beam. Introduction to various types of overlays.

Highway Drainage and Hill Roads: Surface drainage: types, brief design. Types of sub-surface drainage. Special characteristics of hill roads: geometrics, hair pin bends, construction of hill roads, drainage of hill roads, maintenance problems of hill roads.

UNIT-IV

Highway Economics and Finance: Need of economic evaluation. Highway user benefits and costs. Methods of economic evaluation: benefit cost ration method, net present value method, internal rate of return method, comparison. Highway finance.

Tunnels: Sections of tunnels: advantages, limitations and suitability of each section. Shaft. Pilot tunnel. Driving tunnel in rocks: sequence of construction operations, full face method, heading and bench method, drift method. Driving tunnels in soft ground: sequence of construction operations, needle beam method, shield tunneling, compressed air tunneling.

Books:

1. Highway Engg. by S.K. Khanna & C.E.G. Justo, Nem Chand Bros., Roorkee.
2. Principles and practice of Highway engg. by L.R. Kadiyali, Khanna Publishers, Delhi
3. Principles of Pavement Design by Yoder, E.J & Witzak, M.W., John Wiley and Sons, USA.
4. Tunnel Engineering by S.C. Saxena, Dhanpat Rai Publications , N.Delhi.
5. A Text Book of Tunnel, Bridges and Railway Engg. by S.P. Bindra Dhanpat Rai

7th Semester (Civil Engineering)
SEWERAGE AND SEWAGE TREATMENT
CE-473

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Collection of sewage: Importance of sanitation, Systems of sewerage – separate, combined and partially separate. Quantity of sanitary sewage and variations. Shapes of sewer – circular and egg shaped. Design of sewer, self-cleansing velocity and slopes, Construction and testing of sewer lines. Sewer materials, joints and appurtenances.

UNIT-II

Sewage Characterization: Quality parameters- BOD, COD, Solids, D.O., Oil & Grease. Indian Standards for disposal of effluents into inland surface sources and on land.

UNIT-III

Sewage Treatment: Objectives, sequence and efficiencies of conventional treatment units. Preliminary treatment, screening and grit removal units. Theory and design aspects of primary treatment, secondary treatment-activated sludge process & its modifications, Trickling filter, sludge digestion and drying beds. Stabilization pond, aerated lagoon, UASB process, septic tank and Imhoff tank.

UNIT-IV

Disposal of Sewage: Disposal of sewage by dilution – self purification of streams. Sewage disposal by irrigation (sewage treatment).

Books:

1. Waste Water Engineering: Metcalf and Eddy.
2. Sewage and Sewage Treatment: S.K. Garg
3. Sewage and Sewage Treatment: S.R.Krishansagar.
4. Waste Water Engineering: B.C.Punmia
5. Manual on Sewerage and Sewage Treatment: Ministry of Urban Dev., N.Delhi.

7th Semester (Civil Engineering)
ENERGY EFFICIENT BUILDINGS
CE-474

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

UNIT I

Introduction: Fundamentals of energy - Energy Production Systems - Heating, Ventilating and air conditioning –Solar Energy and Conservation - Energy Economic Analysis - Energy conservation and audits -Domestic energy consumption - savings -Energy use in buildings - Residential - commercial buildings.

Environmental: Energy and Resource conservation - Design of green buildings - Evaluation tools for building energy - Embodied and operating energy - Peak demand - Comfort and Indoor air quality - Visual and acoustical quality - Land, water and materials - Airborne emissions and waste management.

UNIT II

Design:

Natural building design consideration - Energy efficient design strategies - Contextual Factors - Longevity and process Assessment -Renewable energy sources and design.

Advanced building Technologies - Smart buildings - Economies and cost analysis.

Services: Energy in building design - Energy efficient and environment friendly building – Thermal phenomena - thermal comfort - Indoor Air quality - Climate, sun and Solar radiations.

UNIT III

Energy audit:

Types of energy audit - Analysis of results - Energy flow diagram – Energy consumption/ Unit production - Identification of wastage -Priority of conservative measures - Maintenance of management programme.

UNIT IV

Energy Management:

Energy management of electrical equipment - Improvement of power factor, management of maximum demand - Energy savings in pumps - Fans - Compressed air systems
Energy savings in Lighting systems - Air conditioning systems - Applications.

Text Books

1. Moore F., Environmental Control System McGraw Hill, Inc., 1994.
2. Brown, G Z, Sun, Wind and Light: Architectural design strategies, John Wiley, 1985.

Reference Books

1. Cook, J, Award - Winning passive Solar Design, McGraw Hill, 1984.

7th Semester (Civil Engineering)
RAIL WAY AND AIRPORT ENGINEERING
CE-475

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.
2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.

UNIT-I

Introduction, Permanent Way and Rails: Rail transportation and its importance in India. Permanent way: requirements and components. Gauges in India and abroad. Selection of gauge. Coning of wheels. Adzing of sleepers. Rails: functions, composition of rail steel, types of rail sections, requirements of an ideal rail section, length of rails. Creep of rails. Long welded rails and continuously welded rails.

Sleepers, Fastenings and Ballast: Sleepers: functions, requirements of an ideal sleeper. Types of sleepers: wooden, cast iron, steel and concrete sleepers, advantages, disadvantages and suitability of each type. Sleeper density. Fastenings for various types of sleepers: fish plates, spikes, bolts, bearing plates, keys, chairs, jaws, tie bars. Elastic fastenings. Ballast: functions, requirements, types of ballast and their suitability.

UNIT-II

Points and Crossings: Necessity. Turnout: various components, working principle. Switch: components, types. Crossing: components and types. Design elements of a turnout, design of a simple turnout. Layout plan of track junctions: crossovers, diamond crossing, single-double slips, throw switch, turn table, triangle.

Signaling, Interlocking and Train Control: Signals: objects, types and classification. Semaphore signal: components, working principle. Requirements / principles of a good interlocking system. Brief introduction to devices used in inter locking. Methods of control of train movements: absolute block system, automatic block system, centralized train control and automatic train control systems.

UNIT-III

Geometric Design of The Track: Gradients, grade compensation. Super elevation, cant deficiency negative super elevation. Maximum permissible speed on curves. Tractive resistances, types. Hauling capacity of a locomotive.

Stations, Yards and Track Maintenance: Stations: functions and classification. Junction, non-junction and terminal stations. Yards: functions, types. Marshalling yard: functions, types. Maintenance of railway track: necessity, types of maintenance brief introduction to mechanized maintenance, M.S.P. and D.T.M.

UNIT-IV

Introduction and Airport Planning: Air transportation, its importance and characteristics, status in India Layout plan of an airport and its basic elements: terminal area, apron, taxiway, runway, hanger. Aircraft characteristics, their effect on elements of an airport. Site selection of an airport. Classification of airports.

Runway Layout and Pavement Design: Runway orientation, Wind Rose diagram. Basic runway length Corrections to basic runway length. Runway patterns. Difference between highway and runway pavement. Types of runway pavements. Design factor for runway pavement. Brief introduction to design of thickness of a runway pavement.

Books:

1. A Text-book of Railway Engineering by S.C Saxena and S.P. Arora, Dhanpat Rai Publications, N.Delhi.
2. Railway Track Engg. By J.S. Mundray, Tata McGraw-Hill Publishing Co. Ltd., N.Delhi.
3. Airport Planning and Design by S.K. Khanna, M.G. Arora, Nem Chand Bros., Roorkee.
4. The Planning and Design of Airports by Robert Hornjeff, McGraw-Hill Book Co.
5. Air Transportation Planning and Design by Virender Kumar & Satish Chandra, Galgotia Publications, N.Delhi.

7th Semester (Civil Engineering)
IRRIGATION ENGINEERING DESIGN & DRAWING
CE-47P1

P
2

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

Complete design and drawing of the following:

1. Design of weirs and barrages on permeable foundation for surface and sub surface flow conditions.
2. Design of Guide Banks.
3. Flood Routing using step by step method.
4. Design of Syphon Aqueduct.
5. Design of Sarda type fall & sloping glacis fall.
6. Seepage line in a homogeneous earth dams on impermeable foundation with horizontal drainage.
7. Design of Ogee Spillway and stilling basin.

7th Semester (Civil Engineering)
SOFTWARE BASED STRUCTURAL ANALYSES LAB
CE-47P2

P
2

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

LIST OF EXPERIMENTS

1. Analysis of multispans Beam and frames using stiffness matrix method.
2. Analysis of Plane frame and space Frame using automated software.
3. Analysis of a three storeyed and ten storeyed building using automated software.
4. Introduction to Auto CAD.
5. Primavera introduction.

7th Semester (Civil Engineering)

PROJECT

CE-47P3

P

On Semester Evaluation: 120 Marks

4

End Semester Evaluation: 80 Marks

- 1. Environmental Engineering**
- 2. Energy Audit of Buildings**
- 3. Geotechnical Engineering**
- 4. Project Management Software Application**

7th Semester (Civil Engineering)
TRANSPORTATION ENGINEERING-II LAB

CE-47P3

**P
2**

On Semester Evaluation: 120 Marks

End Semester Evaluation: 80 Marks

LIST OF EXPERIMENTS

1. Flakiness and Elongation Index of aggregates.
2. Specific gravity and water absorption test on aggregates.
3. Specific gravity of bitumen.
4. Proportioning of aggregates.
5. Marshall's stability test.
6. Stripping test on aggregates.
7. Determination of bitumen content
8. CBR lab. Test on soil
9. Traffic volume study using video graphy technique.
10. Traffic speed study using video graphy technique.

7th Semester (Civil Engineering)
INDUSTRIAL TRAINING & SEMINAR

CE-443

P

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

7th Semester (Civil Engineering)
CONCRETE TECHNOLOGY
CE-47E2

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.
2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.

UNIT-I

Concrete as Structural Material: Introduction, preparation of concrete, grades of concrete advantages of concrete, concept of quality control.

Concrete Making Materials: Cement, tests on cement (physical tests), types of Portland cement, various types of cement-ordinary Portland cement rapid hardening cement, low heat cement, sulphate resistant cement, Portland-pozzolona cement, high strength Portland cement, high alumina cement, waterproof cement, white Portland cement, hydrophobic cement, coloured Portland cement. Aggregates, classification of aggregates based on petrography size, shape & textures, deleterious substances in aggregates bulking of fine aggregate, sieve analysis, grading of aggregates as per IS-383-1970. Fineness Modulus, Maximum size of aggregate. Quality of mixing water, curing water.

UNIT-II

Properties of Concrete: Introduction, workability, factors influencing workability, measurement of workability, requirements of workability, properties of hardened concrete, stress and strain characteristics of concrete, Yong's modulus of concrete, creep and shrinkage of concrete, permeability of concrete durability of concrete sulphate attack, fore-resistance, thermal properties of concrete, construction joints, expansion and contraction joints.

Production of Concrete: Introduction, batching of materials, mixing of concrete materials, transportation of concrete, compaction of concrete, ready mixed concrete, vibrators, Internal vibrators, external vibrators, concrete curing and formwork removal.

UNIT-III

Non-Destructive Testing of Concrete: Significance of Non-Destructive Testing, Rebound Hammer, Ultrasonic pulse velocity techniques, Penetration techniques, pullout tests, vibration methods, Radioactive techniques Cover meter, core-tests.

Deterioration of Concrete & its Prevention: Causes of concrete deterioration, deterioration by water, surface weir, frost action, deterioration by chemical reactions, sulphate attack, alkali-aggregate reaction, corrosion of embedded steel in concrete. Prevention of deterioration of concrete.

UNIT-IV

Repair Technology for Concrete Structures: Symptoms and diagnosis of distress, evaluation of cracks, repair of cracks, common types of repairs, distress in fire damaged structures, underwater repairs.

Special Concrete: Light weight concrete, definition and its properties, applications, high strength concrete, definitions, its properties and applications, mass concrete, waste material based concrete, shotcrete, fiber reinforced concrete: Materials. Fibers-types and properties, ferrocement, polymer concrete composites, heavy-weight concrete for radiation shielding.

Prestressed Concrete:

Introduction, Basic concepts, classification and types of prestressing, prestressing systems, properties of materials, pretensioned and post-tensioned concrete elements.

Books:

1. Gambhir, M.L., Concrete Technology, TMH Pub., N. Delhi
2. Shetty, M.S. Concrete Technology, S.Chand & Co., N.Delhi.
3. Nevellie, A M, Concrete Technology, Pearson Education

7th Semester (Civil Engineering)
RIVER MECHANICS & FLOOD CONTROL
NC-CE-425
(Departmental Elective)

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Introduction:

Indian rivers, flood, flood problems, river morphology behavior of river flow, role of sediments in rivers, changes in regimes, river gauging, causes of flood and losses, alleviation of flooding.

Hydrologic Statistics:

Probabilistic treatment of hydrologic data, frequency & probability functions, statistical parameters, fitting a probability distribution, probability distribution for hydrology

UNIT-II

Flood Mitigation by River Protection:

Basis of river engineering, flow types, resistance flow, energy slope, backwater effect, three dimensional flow, circular and helicoidal flow, river improvement works, river survey, protection by embankment, discharge capacity, design of dyke, stability analysis of dykes, bank protection, bank recession, types of bank protection works, channel improvement, cutoffs diversion, bypass channel, cutoff channel, floored ways, flood plain zeroing, spreading grounds.

UNIT-III

Flood Mitigation by Reservoirs:

Design factors, storage capacity determinations, sequent peak algorithm method, live storage, ripple mass curve flood routing, flood storage, dead storage, reservoir classification, reservoir sedimentation, distribution of sediment load measurement, Mood's method, life of reservoir, reservoir operation based on annual storage and regulation, single and multi purpose reservoirs, gate operation schedule, maximum and minimum flow operation, multi purpose reservoir operation, reservoir economics-cost benefit ratios, optimization of benefits.

UNIT-IV

Flood Forecasting & Warning:

Basic data, communication network, forecasting techniques and procedures, forecast of rainfall, runoff from rainfall, forecasting stages, peak travel time, forecast reporting, flood warning, Engineering methods for flood fighting.

Engineering Economics of Flood Control:

Estimation of flood damages, estimation of benefits of flood control, cost benefit analysis of flood control project.

Books:

1. Flood Control & Drainage Engg. By S.N. Ghosh
2. Hydrology & Flood control Engg. By S.K.Garg
- 3.

7th Semester (Civil Engineering)
ELEMENTS OF EARTHQUAKE OF ENGINEERING
CE-47E3

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Seismology: Introduction, plate tectonics, earthquake distribution & mechanism, seismicity, seismic wave, earthquake magnitude & intensity, seismic zoning & seismometry.

Single degree of freedom systems: Various types of dynamic loads, vibration of single degree of freedom system, free or forced vibrations, types of damping, critical damping, transmissibility, vibration measuring instruments, response spectrum.

UNIT-II

Multi-degree of Freedom (MDOF) systems: Equation of motion, normal modes & natural frequencies, semi-definite systems, dynamic vibration absorbers, vibration dampers, principle of orthogonally, Stodolas method, Holzer's method, matrix method, modal analysis & its limitations, Mode superposition method.

UNIT-III

Seismic Analysis and Design: General principles, assumptions, Seismic coefficient method, response spectrum method, strength and deflection, design criterion for structures, significance of ductility, codal provisions, and design examples.

UNIT-IV

Seismic performance, Repair and strengthening: Methods for assessing seismic performance, influence of design ductility and masonry infills, criterion for repair and strengthening techniques and their applications, addition of new structural elements.

Vibrational control: General features of structural control, base isolation, active and passive control system, earthquake resistance design as per IS: 1893, IS: 4326 and: 13920.

Books:

1. Elements Of Earthquake of Engineering, Jai Krishna, A. R. Chandershekar & Brajesh Chandra, South Asian Pub New Delhi.
2. Dynamics of Structures, Clough & Penzion, McGraw Hill.
3. Earthquake Engineering, Y-X Hu, S-C. Liu and W. Dong, E and FN Sons., Madras.
4. Earthquake Resistant Concrete Structures, George G. Penelis and J. Kapoors, E and FN Sons., Madras.
5. Structural Dynamic, Mario Paz, CBB Pub. N.Delhi.

7th Semester Civil Engineering
ENERGY RESOURCES & TECHNOLOGY
CE-47E4

L T

On Sem. Evaluation 100

3 1

End Sem. Evaluation 100

Note 1. There are nine questions in a set of paper. All questions carry equal marks.
2. Attempt five questions in all. First question is compulsory which carry whole syllabus.
Attempt One question from each of the other four units.

UNIT-I

ENERGY SOURCES & AVAILABILITY:

World energy situation. Indian energy scenario. Comparative study of thermal, hydro, nuclear and gas power plants. Impact of thermal, gas, hydro and nuclear power stations on environment, air and water pollution, green house effect (global warning) geothermal, hydrogen energy, fuel cells,

UNIT-II

SOLAR ENERGY:

Solar constant, solar radiation geometry, local solar time, day length, solar radiation measurement, radiation on inclined surface, solar radiation data & solar charts., solar water heating, solar dryers, solar stills, solar cooling and refrigeration. Conversion of heat into mechanical energy. Active and passive heating of buildings. Solar cells.

UNIT-III

BIOMASS ENERGY:

Introduction to biomass, biofuels & their heat content, biomass conversion technologies. Aerobic & anaerobic digester, Factors affection biogestion, biogas plants - types & description. Utilisation of biogas - Gasifiers, Alternative liquid fuels –ethanol and methanol. Ethanol production.

UNIT-IV

HYDRO POWER ENERGY

Sources of power, estimation of water power, necessity and importance of harnessing small hydro power, flow duration and power duration curves, load curve, load factors, capacity factors, utilization factors, firm and secondary power. Elements of Hydro power, classification of hydro-power plants, run-of-river plants, storage plants diversion canal development, pumped storage plants.

TEXT BOOKS:

1. Electric Power Generation, B.R.Gupta
2. Power Generation, Operation and Control, Wood and Wollenberg, John Wiley & Sons,1984.
3. Power Plant Engg: G.D. Rai

REFERENCE BOOKS:

1. Renewable Energy Resources: John Twidell and Tony Weir
2. Renewable Energy Resources Conventional & Non- Conventional: M.V.R Koteswara

8th Semester (Civil Engineering)
BRIDGE ENGINEERING
CE-481

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Introduction: Definition, components of bridge, classification of bridges, selection of site, economical span, aesthetics consideration, necessary investigation and essential design data.

Standard Specifications for Roads and Railways Bridges: General, Indian Road Congress Bridge Code, width of carriage way, clearance, various loads to be considered for the design of roads and railway bridges, detailed explanation of IRC standard live loads, IRC-5, IRC-21, IRC-78.

UNIT-II

Design Consideration for R.C.C. Bridge: Various types of R.C.C. bridges (brief description of each type), design of R.C.C. culvert and T-beam bridges.

UNIT-III

Design Consideration for Steel Bridges: Various types of steel bridges (brief description of each), design of truss and plate girder bridges.

UNIT-IV

Hydraulic & Structural Design: Piers, abutments, wing-wall and approaches.

Brief Description: Bearings, joints, articulation and other details.

Bridge Foundation: Various types, necessary investigations and design criteria of well foundation.

Books:

1. Essentials of Bridge Engineering, by D.J. Victor, Oxford & IBH Pub., N.Delhi.
2. Design of Bridges, by N.Krishna Raju, Oxford & IBH, N.Delhi.
3. Bridge Deck Analysis, by R.P.Pama & A.R. Cusens, John Wiley & Sons.
4. Design of Bridge Structures, by T.R. Jagadish & M.A. Jairam, Prentice Hall of India, N.Delhi.

8th Semester (Civil Engineering)
INDUSTRIAL WASTE MANAGEMENT
CE-482

L **T**
3 **0**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT - I

Introduction: Uses of water by Industry - Sources and types of wastewaters, quality criteria, effluent standards- Individual and common effluent treatment plants - Population equivalent, Effects of industrial wastes on streams, land, air and waste water treatment plants

Pretreatment Methods: Process modification – methods and materials changes – Reduce, reuse and recycle methods, house keeping etc. to reduce waste discharge and strength of the waste and established methods for by products recovery within the plant operations.

UNIT -II

Equalization – Neutralization - Oil separation – Flootation – Precipitation –Adsorption - Aerobic and anaerobic biological treatment - High rate reactors.

UNIT -III

Industrial Waste Treatment I: manufacturing process description - wastewater characteristics and waste treatment flow sheet for typical industries – Textiles – Tanneries – Pulp and Paper.

Industrial Waste Treatment II: manufacturing process description - wastewater characteristics and waste treatment flow sheet for typical industries -- Petroleum refining – Chemical industries - Sugar and distilleries.

UNIT- IV

Industrial Waste Treatment III: manufacturing process description - wastewater characteristics and waste treatment flow sheet for typical industries-Dairy -- Fertilizers –Nuclear power plants.

Text Books

1. Eckenfelder. W.W., Industrial Water Pollution Control, McGraw Hill, 2000.
2. Arceivala.S.J. Wastewater Treatment for Pollution Control, Tata Mc.Graw Hill. 2008.

Reference Books

1. Nemerow,N.L., Theories and Practices of Industrial Wastes Treatment, Addison

8th Semester (Civil Engineering)
GENERAL PROFICINCY & FITNESS
CE-482

L T

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

8th Semester (Civil Engineering)
(Departmental Elective)
GROUND WATER ENGINEERING
CE-48E1

L T
3 1

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Properties of Aquifers, Formation constants, compressibility of aquifers, Equation of motion for steady and unsteady ground water flow in isotropic homogeneous aquifers, Dupit's assumptions. Unconfined flow with a recharge, tile drain problem. Ground water exploration and methods of investigations.

UNIT-II

Effect of Boundaries, interference of water, leaky aquifers, Thiem's equilibrium formula for unconfined and confined aquifers and determination of hydraulic properties of aquifers. Partial penetration of an aquifer by a well, spherical flow in a well. Non equilibrium formula for aquifer (unsteady radial flows).

UNIT-III

Tubewells, optimum capacity, silting of tubewell, design of Tubewells in different aquifers, tubewell types, parts, bore hole, strainers, its types, well pipe, casing pipe, blind pipe. Construction and working of tubewells, site selection, drilling operation, cable tool method, hydraulic method, rotary Method and drilling fluids, well screen assembly installation, verticality and alignment of tubewells, gravel packing, development of tubewells, sickness, in construction and corrosion and failure of tubewells, Pumping equipment and hydraulic testing of pumps.

UNIT-IV

Artificial Recharge of Ground Water, considerations and methods, recharge techniques induced infiltration, water spreading, flooding, basins, ditching, modification of natural channels, irrigation, recharge pits, shafts and recharge wells.

Books:

1. Groundwater Hydrology, D.K. Todd, John Wiley & Sons Inc. New York.
2. Groundwater H.M. Raghunath, Wiley Eastern Ltd., N.Delhi.

8th Semester (Civil Engineering)
(Departmental Elective)
ENVIRONMENTAL IMPACT ASSESSMENT
CE-48E2

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Environment and Human Activity: Resources, pollution, reuse and environmental management.

Management of Aquatic Environment: Water quality controls. Drainage basin activities and water pollution. The impact of human activity on aquatic resources. The control measures, regional planning.

UNIT-II

Air Quality Management: Atmosphere, effect of human activity on air quality, waste disposal alternative. Optimization, planning of waste disposal.

UNIT-III

Waste Management: Waste disposal methods, impact of waste disposal of human activity.

Land Use Management: Impact of land use on human life. Control, of hazards in land use, management of land use.

UNIT-IV

Environmental Assessment: National environmental policy, implication of environment assessment in design process. Preparation of assessment, quantification. General requirements of environmental standards. Techniques of setting standards.

Books:

1. Environmental Impact Analysis by R.K. Jail and L.V. Urban.
2. Environmental Impact Assessment by Canter
3. Environmental Impact Assessment by J.Glasson.

8th Semester (Civil Engineering)
(Departmental Elective)
DESIGN OF HYDRAULIC STRUCTURES
CE-48E3

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Gravity Dams: Dam parameters, Criteria for selection of dam sites, Joints & keys, Cooling arrangement. Water stops at joints, Closing gaps, forces acting on dams, Types of loads, Elementary profile of a gravity dam, Step by step method, Stability analysis methods, Safety criteria, Gravity analysis, Internal stress calculation, Graphical determination of shear stress, Effect of foundation elasticity on stresses, Galleries, Behavior of concrete gravity dam subjected to earthquakes, Thermal stresses.

UNIT-II

Arch Dams: Development of arch dam, Valleys suited for arch dams, Arch dams layout, Types of arch dams, Appurtenant works, Thin cylinder theory and most economical central angle, Design of arch dam, Suitability at abutments, Effects of foundation elasticity on behaviours of arch dam.

Buttress Dams: Types of buttress dam, Selection of type of buttress dam, Most economical profile having no tension, Design principles, Butterss design by Unit column theory, Basic shape of buttress, Design of multiple arch dam, Provision of spillways and outlet works.

UNIT-III

Spillways and Energy Dissipaters: Factors affecting design, Components of spillways, Types of spillways, Design principles. Hydraulic design ogee spillway, Side channel spillway, Chute spillway, Syphon spillway, Shaft-spillway, Energy dissipation below spillways, Bucket type energy dissipaters, Design of various types of stilling basins.

UNIT-IV

Weirs and Barrages: Design of weirs & barrages on permeable foundation, Khosla theory of independent variable. Upstream and downstream protection, Flownets, design of sloping Glacis weir, calculation for hydraulic jump and uplift pressure.

Books:

1. Engineering for Dams by Creager, Justin & Hinds, Wiley Eastern Pvt. Ltd. Delhi.
2. Concrete Dams by R.S. Varshney, Oxford & IBH Pub. Co. Delhi,
3. Dams Part – I Gravity Dams by K.B. Khushalani, Oxford & IBH, Delhi
4. Design of Weirs on Permeable foundations, CBIP Pub. No. 20. Delhi
5. Hydraulic Design of Spillways, ASCE Technical Engg. No. 2, Design Guides as Adapted from the US army Corps.

8th Semester (Civil Engineering)
(Departmental Elective)
PRE STRESSED CONCRETE
CE-48E4

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT I

Introduction: Basic concepts of prestressing, terminology, advantages and applications of prestressed concrete. **Materials for Prestressed Concrete:** High strength Concrete, permissible stresses in concrete, high strength steel, permissible stresses in steel. **Prestressing Systems:** Prestensioning and post tensioning systems, various types of tensioning devices, Lec-Macall systems, Magnel Blaton post tensioning, Freyssinet systems, Gifford Udal system.

UNIT II

Losses of Prestress : Types of losses of prestress, loss due to elastic deformation of concrete, loss due to shrinkage of concrete, loss due to creep of concrete, loss due to relaxation of stress in steel, loss due to friction, loss due to anchorage slip, total loss in pretensioned and post tensioned members. **Analysis of Prestress and Bending stresses:** Basic assumptions, resultant stresses at a section, concept of load balancing, cracking moment.

UNIT III

Deflections: Factors influencing deflections, short term deflections of un-cracked members, deflections of cracked members, prediction of long term deflections. **Shear and Torsional Resistance:** Ultimate shear resistance of prestressed concrete members, prestressed concrete members in torsion, design of reinforcements for torsion, shear and bending.

UNIT IV

Design of Flexural Members : Dimensioning of flexural members, design of pre-tensioned and post tensioned beams, design of partially prestressed members, design of one way and two way slabs, continuous beams. Design for axial tension, compression and bending, bond and bearing.

Text Books

1. Prestressed Concrete by N. Krishna Raju, TMH Publishing Company, New Delhi,
2. Prestressed Concrete by P. Dayartnam, Oxford and IBH Publication, New Delhi.

Reference books 1. Design of Prestressed Concrete Structures by T Y Lin & Ned H. Burns

8th Semester (Civil Engineering)
(Departmental Elective)
SOFTWARE BASED CONSTRUCTION MANAGEMENT
CE-48E5

L **T**
3 **1**

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Introduction; Networking and Web preliminaries; HTML, CGI, Java & JavaScript; Audio and Video; Database & SQL, IT in Construction Industry.

UNIT-II

Modelling of structures; Mesh generation, different algorithms and implementation; Visualization of structures, pre-and post-processing, displacement plotting, stress contouring, identification of hot spot in structures, by standard packages and with small programs.

UNIT-III

Software Design Package: Introduction to professional Structural Analysis and Design packages; Database system for steel table, unit weight of materials, loading etc. as per IS codes. Analyzing and designing of simple structures with the available software.

UNIT-IV

Checking of results; Design methods of RCC and steel structures, difficulties faced in computer aided decision-making.

Books:

1. Internet and WWW – how to program by Deital, Pearson Edu., New Delhi
2. Introduction to DMMS by Kahte, Pearson Edu., New Delhi
3. Core Java (Vol-I) by Horstmann, Pearson Edu., New Delhi
4. Advanced Structural Analysis by A.K. Jain, Nem Chand & Bros., Roorkee.
5. SAP and STRUDS Manuals

8th Semester (Civil Engineering)
(Departmental Elective)
MACHINE FOUNDATIONS
NC-CE-48E7

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3 1

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

- Note: -**
- 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
 - 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Theory of Vibrations: Definitions, harmonic motion, vibrations of a single degree freedom system, transmissibility, theory of vibration measuring instruments.

General Principles of Machine Foundation Design: Types of machines and machine foundations, criteria for satisfactory action of a machine foundation, permissible amplitude, allowable soil pressure, permissible stresses in concrete and steel, permissible stresses in concrete and steel, permissible stresses in timber.

UNIT-II

Evaluation of Parameters: Modes of vibration of a rigid block foundation, Barken's soil spring constants, determination of coefficients of elastic uniform compression and Elastic uniform shear.

Foundation for Reciprocating Machines: Analysis of block foundation by Barken's theory of linear elastic weightless spring analogy, Indian Standard for design and construction of foundation for reciprocating machine, design procedure, design examples.

UNIT-III

Foundation for Impact Machines: Dynamic analysis, Barken's recommendations for weight and base contact area, IS Code practice for design and construction of foundations for impact machines, design procedure, design examples.

Foundation for Rotary Machines: Special considerations, design criteria, methods of analysis and design.

UNIT-IV

Vibration Isolation and Screening: Active isolation, passive isolation, methods of isolation, wave screening, vibration absorbing materials, planning for vibration isolation.

Books:

1. Dynamics of Bases and Foundations by D.D.Barken
2. Soil Dynamics by Shamsheer Prakash
3. Soil Dynamics and Machine Foundations by Swami Saran
4. Principles of Soil Dynamics by B.M. Das
5. Vibration and Shock Isolation by Crede

8th Semester Civil Engineering

ROAD SAFETY & AUDIT

CE-48E8

L T
3 1

On Semester Evaluation: 100 Marks
End Semester Evaluation: 100 Marks

Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.
2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.

- 1. Introduction:** Road Safety scenario in India and World, Road Accident Characteristics.
2. Need of Planning for Network, Land Use and Road Environment for Safety, Designing for Safety: Road Link Design, Junctions.
3. Introduction to Road Safety Engineering and Crash Investigation, Human Factors Relating to Crashes/Accidents, Crash/Accident Investigation & Crash Problem Diagnosing, Crash Problems into Solutions & Crash, Investigation Reporting, Crash/Accident Costing, Economic Appraisal.
- 4. Safety at Construction Site:** Safety provisions for workers at construction site, Construction Zone markings, signs.
- 5. Road Safety Auditing-** An Introduction, Concept and need of Road Safety Audit (RSA). Procedures in RSA, design standards, audit tasks, stages of road safety audit, Road Safety Audit Types, key legal aspects, process, audit team and requirements, Checklist, how to use Checklists Road Safety inspection. Road design issues in RSA's. Overview of Road Safety Hazards. Report Writing including deficiency identification, corrective actions recommendations,
6. Street Lighting & Traffic Signals, Provisions for NMT Vehicles in India, Safety Provisions for Pedestrians & Cyclists, Road Signs and Pavement Markings.
7. Safe System Approach- A Global Perspective, Speed Management & safety, Safe System and Speed & Assessing speed limit, Type of speed limit & Speed zone signing Infrastructure to support safe speed feedback and enforcement.

Recommended References:

1. Highway Engineering by Khanna and Justo, Nem Chand & Brothers, Roorkee
2. Highway Engineering by L.R. Kadyali, Nem Chand & Brothers, Roorkee
3. BABKOV, V.F. 'Road conditions and Traffic Safety', MIR publications, - 1975.
4. K.W. Ogden, 'Safer Roads – A Guide to Road Safety Engg.' Averbury Technical, Ashgate Publishing Ltd., Aldershot, England, 1996.

BASICS OF MANAGEMENT

MGT-481

L	T	On Semester Evaluation	100
3	0	End Semester Evaluation	100

- Note: - 1. There are NINE questions in a set of question-paper. All questions carry equal marks.**
- 2. Attempt five questions in all. FIRST question is compulsory which covers the whole syllabus. Attempt ONE question from each of the other four Units.**

UNIT-I

Characteristics and Principles of Management- Meaning Management as an Art, Science and Profession, Functions of Management, Corporate Social Responsibility Communication -Process and Barriers.

UNIT-II

Marketing Management-Meaning, Nature, Scope and Functions of marketing Management, Marketing Research, Marketing Mix, Marketing Information system International Marketing Management- Meaning, Nature and Scope.

UNIT-III

Financial Management-Objectives, Scope and Functions of financial management, Capital Structure, Sources of Finance, Project Management- meaning, Feasibility study of Project, Social Cost Benefit Analysis.

UNIT-IV

Human Resource Management- Meaning, Nature, Scope and Functions of Human Resource Management, Difference between Personal management and Human Resource Management, Job Analysis-meaning and process, Performance Appraisal

Suggested Readings

- Philip Kotler.(2003). Marketing Management: Analysis, Planning, Implementation and Control. Prentice Hall of India
- Michael, J.E., Bruce, J.W. and William, J.S. (13th Edition, 2004). Marketing Management. Tata McGrawHill, New Delhi.
- Aswathapa, K.; Human Resource and Personnel Management, TMH, 1997

8th Semester Civil Engineering

TECHNOPRENEURSHIP MGT480E-1

L T

On Sem. Evaluation 100

3 -

End Sem. Evaluation 100

Note 1. There are nine questions in a set of paper. All questions carry equal marks.

2. Attempt five questions in all. First question is compulsory which carry whole syllabus.

Attempt One question from each of the other four units.

UNIT-I

ENTREPRENEURIAL DEVELOPMENT PERSPECTIVE: Concepts of Entrepreneurship Development, Evolution of the concept of Entrepreneur, Entrepreneur Vs. Intrapreneur, Entrepreneur Vs. Entrepreneurship, Entrepreneur Vs. Manager, Attributes and Characteristics of a successful Entrepreneur, Role of Entrepreneur in Indian economy and developing economies with reference to Self-Employment Development, Entrepreneurial Culture

UNIT II

CREATING ENTREPRENEURIAL VENTURE: Business Planning Process, Environmental Analysis - Search and Scanning, Identifying problems and opportunities, Defining Business Idea, Basic Government Procedures to be complied with.

UNIT III

ENTREPRENEURSHIP DEVELOPMENT AND GOVERNMENT: Role of Central Government and State Government in promoting Entrepreneurship - Introduction to various incentives, subsidies and grants - Export Oriented Units - Fiscal and Tax concessions available; Role of Central/State agencies in the Entrepreneurship Development - District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB).

UNIT IV

PROJECT MANAGEMENT AND CASE STUDIES

Technical, Financial, Marketing, Personnel and Management Feasibility, Estimating and Financing funds requirement - Schemes offered by various commercial banks and financial institutions like IDBI, ICICI, SIDBI, SFCs, Venture Capital Funding, Why do Entrepreneurs fail - The Four Entrepreneurial Pitfalls (Peter Drucker), Case studies of Successful Entrepreneurial Ventures, Failed Entrepreneurial Ventures and Turnaround Ventures.

Texts and References:

1. Entrepreneurship: New Venture Creation - David H. Holt.
2. Entrepreneurship - Hisrich

8th Semester (Civil Engineering)
ENVIRONMENTAL ENGINEERING-II LAB
NC-CE-48P2

P
2

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

LIST OF EXPERIMENTS

1. To determine the acidity of a sewage sample.
2. To determine the alkalinity of sewage sample
3. To determine total, suspended, dissolved and settable solids in a sewage sample.
4. To determine volatile and fixed solids in a sewage sample
5. To determine the chloride concentration in a sewage sample.
6. To determine the sulphate concentration in a sewage sample.
7. To determine the B.O.D. of a given sewage sample.
8. To determine the C.O.D. of a given sewage sample

8th Semester (Civil Engineering)

PROJECT

CE-48P2

**P
6**

**On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks**

- 1. STRUCTURAL ENGINEERING**
- 2. TRANSPORTATION ENGINEERING**
- 3. WATER RESOURCE ENGINEERING**
- 4. PROJECT PROCUREMENT & CONSTRUCTION MANAGEMENT**

8th Semester (Civil Engineering)
ESTIMATION & ACCOUNTS
CE-448P3

P
2

On Semester Evaluation: 120 Marks
End Semester Evaluation: 80 Marks

UNIT-I

Estimate: Principles of estimation, units, items of work, different kinds of estimates, different methods of estimation, estimation of materials in single room building, two roomed building with different sections of walls, foundation, floors and roofs, R.B. and R.C.C. works, Plastering, White-washing, Distempering and painting, doors and window, lump sum items, Estimates of canals, roads etc.

UNIT-II

Specification of Works: Necessity of specifications, types of specifications, general specifications, specification for bricks, cement, sand, water lime, reinforcement; Detailed specifications for Earthwork, Cement, concrete, brick work, floorings, D.P.C., R.C.C., cement plastering, white and colour washing, distempering, painting.

UNIT-III

Rate Analysis: Purpose, importance and requirements of rate analysis, units of measurement, preparation of rate analysis, procedure of rate analysis for items: - Earthwork, concrete works, R.C.C. works, reinforced brick work, plastering, painting, finishing (white-washing, distempering).

UNIT-IV

Public Works Account: Introduction, function of P.W. department, contract, guidelines, types of contracts, their advantages and disadvantages, Tender and acceptance of tender, Earnest money, security money, retention money. Measurement book, cash book, preparation, examination and payment of bills, first and final bills, administrative sanction, technical sanction.

Books:

1. Estimation and Costing for Building & Civil Engg. Works by P.L.Bhasin, S.Chand & Co., N.Delhi.
2. Estimating, Costing in Specification in Civil Engg. by M.Chakarborty, Calcutta.
3. Estimating & Costing in Civil Engg. Theory & Practice by B.N.Dutta, S.Dutta & Co., Lucknow.
4. Building Construction Estimating by George H.Cooper, McGraw – Hill Books Co., New York.

8th Semester (Civil Engineering)

SEMINAR

CE-48P4

P

On Semester Evaluation: 120 Marks

2

End Semester Evaluation: 80 Marks

Students will give a presentation on emerging technical topics.