

Design of Concrete Structures-II Sem VIII

General Course Information

Course Code: PEC-CVE456-T Course Credits: 3 Mode: Lecture (L) Type: PE-IV Contact Hours: 3 hours (L) Examination Duration: 03 hours.	Course Assessment Methods (Internal: 30; External: 70) Two minor test each of 20marks, class performance measured through percentage of lecture attended (4 marks), assignments and quiz etc. (6 marks) and end semester examination of 70 marks. For the end semester examination, nine questions are to be set by the examiner. Question number one will be compulsory and based on the entire syllabus. It will contain seven short answer type questions. Rest of the eight questions is to be given by setting two questions from each of the four units of the syllabus. A candidate is required to attempt any other four questions selecting one from each of the four units. All questions carry equal marks.
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S. No.	Course outcomes	RBT* Level
	At the end of the course students will be able to:	
CO1	Explain design of special concrete structures like continuous/ curved beams, stair-cases, water tanks, domes, retaining walls and bridges.	L2(Understanding)
CO2	Employ the concepts of structural engineering for the construction of special structures.	L3(Applying)
CO3	Examine the structural aspects of special structures.	L4 (Analyzing)
CO4	Evaluate the structural condition of special structures	L5 (Evaluating)
CO5	Design special concrete structures like continuous/ curved beams, stair-cases, water tanks, domes, retaining walls and bridges.	L6 (Creating)

*Revised Blooms Taxonomy

UNIT I

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

Stair- Cases: Type of stair-cases, Effective span of stairs, Distribution of loads on different types of stair cases, Design examples.

UNIT II

Water Tanks: Estimation of Wind and earthquake forces, design requirements, rectangular and cylindrical underground, Intze tanks, design considerations, design examples.

UNIT III

Design of curved beams in plan: Analysis and Design of curved beams fixed at both ends, ring beams

Design of Domes: Meridional and hoop stress in spherical and conical domes.

UNIT IV

Retaining walls: Design of cantilever and counter fort type retaining walls.

Introduction to Bridge Engineering: Definition, components of a bridge, classifications, importance of bridges. Need for investigations, selection of bridge site, I.R.C. loadings.

Text Books

1. Reinforced Concrete Structures, P. C. Varghese, Tata McGraw Hill
2. Advanced Reinforced Concrete Structures, P. C. Varghese, Tata McGraw Hill
3. Reinforced Concrete Design, M.L. Gambhir, Macmillan India Ltd., New Delhi
4. Limit State Design of Reinforced Concrete, A.K. Jain, Nern Chand and Bros., Roorkee
5. Behaviour, Analysis and Design of R.C.C. Structural Elements, LC. Syal and Ummat, A.H. Wheelers. New Delhi
6. Elements of Bridge Engineering, D. Johnson Victor, Oxford and IBH Publishers, New Delhi.
7. Plain and Reinforced concrete, Vol. 2, O P Jain and J. Krishna, Nern Chand and Bros., Roorkee
8. Reinforced Concrete Design, SU Pillai and D Menon, Tata McGraw Hill

Course Articulation Matrix:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	2	2	1	-	-	-	-	-	1	1	1	2	2
CO2	2	2	2	2	1	-	-	-	-	-	1	1	1	2	2
CO3	2	2	2	2	1	-	-	-	-	-	1	1	1	2	2
CO4	2	2	3	3	1	-	-	-	-	-	1	1	2	3	3
CO5	2	2	3	3	1	-	-	-	-	-	1	1	2	3	3