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GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR

(GIET UNIVERSITY)

Ph.D. (First Semester-Winter) Examinations, June – 2025

23WPPECV1011 – Design of Advanced Concrete Structures

(Civil Engg.)

Time: 3 hrs Maximum: 70 Marks

The figures in the right hand margin indicate marks.

	Answer *ANY FIVE* Questions. **(14 x 5 = 70 Marks)**	**Marks**
1.a.	Describe the advantage and disadvantages of moment redistribution	8
b.	Explain moment curvature relation of reinforcement concrete sections	6
2.	A beam of AB span 4 m fixed at one end and freely supported at other end carrying a UDL of 30 KN/m at collapse. Draw maximum BM as per recommendation of code IS 456-2000 for redistribution of moment	14
3.a.	Short note on: i) Shear due to unbalanced moments. ii) Effect of opening in flat slab	7
b.	Short note on: i) Strengthening of column areas for moment transfer. ii) Shear design guidelines as per ACI code.	7
4.	A flat plate 7 × 6 m panel on 500 × 500 mm column has a slab thickness of 180 mm, designed for a load of 9.3 kN/m^2 Check for the safety of slab in shear and also determine the necessary stirrups for reinforcing the slab. Adopt M25 and Fe 415.	14
5.a.	Calculation of Crack width in Beams	7
b.	Factors affecting Crack width in beams	7
6.a.	Short note on: i) Shear effect in two-way slab with beams. ii) Flat slabs with opening.	7
b.	Short note on: i) ACI guidelines for shear calculations. ii) Strengthening of columns for shear and torsion	7
7.	A plain braced concrete wall of dimensions 8 m high, 6m long and 200 mm thick is restrained against rotation at its base and unrestrained at the ends. If it has to carry a factored total gravity load of 200 KN and a factored horizontal load of 8 KN at top. Check the safety of the wall. Assume M20 concrete and Fe 415 steel.	14
8.	Explain the design procedure to design the shear wall.	14

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