QP Code: RM23MTECH097 | Reg. No | | | | | | | | | | | AY 23

GIET UNIVERSITY, GUNUPUR – 765022

M. Tech (Second Semester) Examinations, May – 2024

MPCSE2010 – Advanced Reinforced Concrete Design

(SE)

Time: 3 Hrs | Maximum: 70 Marks

(The figures in the right hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer all questions	CO#	Blooms Level
a. When do we provide raft foundations?	CO2	K2
b. What are the factors influencing soil reaction on foundations?	CO1	K2
c. What are the possible failure mechanisms of a pile cap?	CO1	K2
d. Compare the interaction between structural frame and shear wall.	CO4	K2
e. Distinguish the main difference between a braced wall and an un-braced wall	CO4	K2
f. Describe about the function of lateral ties in a RC column.	CO3	K2
g. Give the characteristics of yield line .	CO3	K2
h. What are the types of shear action to be checked in the design of a flat slab?	CO4	K2
i. How are shear walls classified?	CO2	K2
j. How spacing of shear reinforcement is decided for rectangular beam subjected to torsion?	CO1	K2

PART – B **(10 x 5=50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO#	Blooms Level
2. A flat plate with 7.5 x 7.5m panels on 500 x 500mm columns has a slab thickness of 180 mm, designed for a total load of 9.0 kN/m2. Check the safety of slab in shear and also find the stirrups for reinforcing in the slab. Use M25 and Fe415.	10	CO4	K3
3. R. C. Grid floor is to be designed to cover a floor area of 12 m X 8 m. The spacing of ribs in mutually perpendicular directions is 1.5 m centre to centre. Live load on the floor is 2KN/m. Analyse the grid floor by IS 456 methods and enumerate the suitable reinforcements.	10	CO4	K3
4. a. Discuss the Calculation of Crack width in Beams.	5	CO3	K2
b. What are the factors affecting Crack width in beams?	5	CO3	K2
5. A beam of AB span 4m 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.	10	CO2	K3
6. Using yield line theory, design the floor slab of a class room of a multi-storeyed structure for the following data. Dimensions of the class room are 4 m × 4 m. The panel is continuous on all edges. Assume M25 concrete and Fe415 grade steel. Derive the formulae involved. Sketch the reinforcement details. Assume moderate exposure condition.	10	CO2	K3

7.	Design a rectangular beam of size 300 x 500 mm subjected to a bending moment of 40 kNm, Shear force of 50 kN and torsional moment of 30 kNm at service condition. Use M20 & Fe415. Design the reinforcement	10	CO1	K3
8.a.	A RCC beam 230 x 450 mm has a clear span of 5m. The beam has 2 x 20 mm and bars 'going into the support, factored shear force is 125 kN. Check for development length of Fe 415 and M20 grade of concrete is use.	5	CO1	K2
b.	A RCC beam 250 x 500 mm has a clear span of 5.5 m. The beam has 2-20 mm<J> bars going in to the support. Factored shear force is 140 kN. Check for the development length. Use Fe415 and M20.	5	CO1	K2

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