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KAMALA INSTITUTE OF TECHNOLOGY & SCIENCE, SINGAPUR

23CE28PC503

III.B. Tech. I. Semester Regular Examinations, November- 2025

STRUCTURAL ENGINEERING – I (RCC)

(CE)

Time: 3 Hours

Max.Marks:60

Note: Question paper consists of Part-A & Part-B.

i) **Part-A** for 10M, ii) **Part-B** for 50marks

- **Part A** is compulsory, consists of 10 sub questions from all units carrying equal marks.
- **Part-B** consists of **10 questions** (numbered from 2 to 11) carrying **10marks** each. From each unit there are 2 questions and the students should answer one of them. Hence the student should answer **5 questions** from **Part-B**.

PART-A (10Marks)			
Q.No	Questions	Marks	BTL
1.a)	Differentiate between the PCC and RCC.	1M	1
1.b)	For designing the RC beams, what assumptions are recommended by the IS code.	1M	1
1.c)	Explain the effect of shear in the RC beams.	1M	2
1.d)	How do you check the development length of steel bars in a RC beams.	1M	2
1.e)	Differentiate the between one way and two way slabs.	1M	2
1.f)	What are the different types of two way slabs?	1M	2
1.g)	Explain the IS code provisions of longitudinal reinforcement in a column	1M	2
1.h)	Differentiate between the long column and short column as per IS code.	1M	2
1.i)	Explain the IS code provisions of nominal reinforcement and cover to the main reinforcement in the design of footings.	1M	2

1.j)	When do we provide the combined reinforcement	1M	2
PART-B (50Marks)			
Q.No	Questions	Marks	BTL
2	Determine the moment of resistant of a beam of dimensions 250 mm x 350 mm. The area of steel consists of 3-12 mm diameter placed at a distance of 40 mm from the bottom of beam. Adopt the materials suitably.	10M	3
OR			
3	An RC beam is having an effective span of 4m is required to carry a udl of 25 kN/m inclusive of its self weight. Design the beam for flexure only. Use M30 and Fe415.	10M	5
OR			
4	An RCC beam 250 mm x 400 mm (effe.)is carrying a udl of 15 kN/m. The beam is reinforced with 4-22 mm diameter bars. The clear span of the beam is 4m. Design the shear reinforcement for the beam.	10M	5
OR			
5	An RC Beam 250 x 500 mm has a clear span of 5.5 m. The beam has 2-20 mm diameter bars going in to the supports which is supporting a factored shear force of 140 kN. Check for development length if Fe415 and M20 are used.	10M	4
OR			
6	A simply supported slab of a corridor of a school building has a clear span 2.5 m and is supported on beams 230 mm width. Design the slab, if the beam is carrying a live load of 5 kN/m ² .	10M	5
OR			
7	Design a reinforced concrete slab for a room of clear dimensions 5 m x 6 m. The slab is supported on walls of width 300 mm. The slab is carrying a live load of 3 kN/m ² and floor finish of 1 kN/m ² . The corners of slab are	10M	5

	held down.		
↶	Design a column of size 400 mm x 600 mm and having 3 m unsupported length. The column is subjected to a load of 2000 kN and is effectively held in position but not restrained against rotation. Use M25 concrete and Fe 415 steel.	10M	5
OR			
↷	Design a square footing of uniform thickness for an axially loaded column of 500 mm x 500 mm. The safe bearing capacity of soil is 180 kN/m ² . Load on column is 950 kN. Use M25 concrete and Fe 415 steel.	10M	5
10	Design a rectangular footing of uniform thickness for an axially loaded column of size 300 mm x 600 mm. The load on the column is 1250 kN. Safe bearing capacity of the soil is 190 kN/m ² . Use M25 concrete and Fe 415 steel.	10M	5
OR			
11	Design a square footing for an axially loaded column of 400 mm X 400 mm size to carry a load of 950kN. Use M20 concrete and Fe415 steel. Take the safe bearing capacity of the soil as 180 kN/m ²	10M	5

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