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Bengaluru

Mid Term Examinations - October 2026

Date: 07/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: CIV2508 **Course Name:** Design of RCC Structural Elements

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2	CO3
Marks	20	36	34

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define limit state.	2	CO2	BT1
2	How is the effective lenght of a simply supported beam calculated?	2	CO2	BT1
3	What is the span by effective depth ratio of a cantilever beam?	2	CO2	BT1
4	List the different types of crack formed on a Reinforced Concrete Beam.	2	CO3	BT1
5	What are the different types of shear reinforcement provided in an RC beam?	2	CO3	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	State the assumptions made in analysis of beam in flexure and sketch the stress-block diagram.	10	CO1	BT2
7	What are the different types of beam sections?	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT
8	Design a singly reinforced concrete beam for a clear span of 4.0 m. The width of each support is 200 mm, and the beam carries a live load of 4 kN/m. Adopt M20 grade concrete and Fe415 HYSD steel.	15	CO2	BT4
9	A simply supported RCC beam is required to carry a live load of 7 kN/m over a clear span of 3.5 m. The beam is supported on 230 mm wide supports. Design the beam as a singly reinforced beam using M25 grade concrete and Fe500 HYSD bars.	15	CO2	BT4

PARTD: Answer Any 1 Following Questions. 15 M

Q.N.	Questions	M	CO	BT
10	A rectangular RCC beam has a width of 250 mm and an effective depth of 550 mm. It is reinforced with 4 bars of 25 mm diameter on the tension side, of which two bars are bent up at 45° near the supports. The beam is provided with 10 mm diameter, 2-legged stirrups at 175 mm spacing near the support section. Using M25 grade concrete and Fe500 HYSD bars, determine the shear strength of the beam at the support section.	15	CO3	BT3

11	A reinforced concrete beam of rectangular section 300 mm wide is reinforced with four 20 mm diameter bars at an effective depth of 500 mm, out of which two bars are bent-up near the support. The beam is subjected to a factored shear force of 350 kN at the support section. Assuming M25 grade concrete and Fe415 HYSD bars, design suitable vertical stirrups for the beam.	15	CO3	BT3