



PRESIDENCY UNIVERSITY

BENGALURU

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Make - Up Examinations – DECEMBER 2025

Date: 26-12-2025

Time: 09:30 am – 12:30 pm

School: SOE	Program: B. Tech CIV/CII		
Course Code : CIV211	Course Name : Design of RCC Structural Elements		
Semester: MK	Max Marks: 100	Weightage: 50%	

CO - Levels	C01	C02	C03	C04	C05
Marks	26	26	48	-	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.
- (iii) Use of IS456 code book is permitted

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20Marks

1	Write a short notes on (i) Characteristics strength of materials (ii) Characteristics of loads.	2 Marks	L1	C01
2	Write any two assumptions made in limit state of collapse in flexure?	2 Marks	L1	C01
3	Write the codal specification for limiting depth of neutral axis in limit state method.	2 Marks	L1	C01
4	Write short note on under reinforced and over reinforced sections.	2 Marks	L1	C02
5	What do you understand by doubly reinforced beam section?	2 Marks	L1	C02
6	Name the different types of shear reinforcement provided to resist shear forces developed in RC beam sections	2 Marks	L1	C02
7	Write any two differences between one way slab and two way slab	2 Marks	L1	C03
8	Write the span/depth ratio for two way slab system as per IS456	2 Marks	L1	C03

9	Write IS specifications for minimum eccentricity of an axially loaded short column.	2 Marks	L1	CO3
10	Classify the columns based on type of loading.	2 Marks	L1	CO3

Part B

Answer ALL the Questions

Total 80 Marks.

11.	a.	Determine whether the section is under or over-reinforced with $f_{ck} = 30 \text{ N/mm}^2$, $f_y = 415 \text{ N/mm}^2$ for the following values of A_{st} : (a) 1610 mm^2 (b) 4190 mm^2 .	10 Marks	L1	CO1
	b.	Find the moment of resistance of the beam section with 200mm width and effective depth 400mm, reinforced with 3-16mm diameter of Fe415 steel bars. Take M20 concrete.	10 Marks	L2	CO1

or

12.	Design a singly reinforced concrete beam to support a working live load of 6 kN/m over a clear span of 3m. Use M20 grade concrete Fe415 HYSD bars. Adopt width of supports as 200mm.	20 Marks	L3	CO1
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13.	a.	Explain the different types of shear failures observed in reinforced concrete members.	08 Marks	L1	CO2
	b.	A reinforced concrete beam of rectangular section has a width of 300mm and effective depth of 550mm. The beam is reinforced with 4 bars of 20mm diameter on the tension side. Two of the tension bars are bent-up at 45° near the support section. In addition the beam is provided with 8mm diameter 2 legged stirrups at a spacing of 150mm near the supports. Using M20 grade concrete and Fe415 HYSD bars, estimate the shear strength of the support section.	12 Marks	L2	CO2

Or

14.	A reinforced concrete beam of rectangular section 300mm wide is reinforced with four bars of 20mm diameter at an effective depth of 550mm out of which 2 bars are bent-up near the support. The beam has to resist a factored shear force of 350 kN at support section. Assuming M20 concrete and Fe415 HYSD bars, design vertical stirrups for the section.	20 Marks	L3	CO2
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15.	Design a simply supported RCC slab, for a room having inside dimensions 3m x 7m. The thickness of supporting wall is 300mm. The live load on the slab is taken as 4kN/m ² . Adopt M20 grade concrete and Fe415 HYSD bars. Take floor finish = 1.0 kN/m ² .	20 Marks	L3	C03
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Or

16.	Design a simply supported RCC slab, for a room having clear dimensions, 4m by 6m with corners free to lift up. Adopt M20 grade concrete and Fe415 HYSD bars. Take floor finish = 1 kN/m ² and live load = 3kN/m ²	20 Marks	L3	C03
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17.	Design the reinforcement in a column of size 400mm x 600mm, subjected to an axial service load of 2300 kN. The effective length in both directions is 4m. Use M20 concrete and Fe415 steel.	20 Marks	L3	C03
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Or

18.	Design the reinforcement in a column of size diameter 400 mm, subjected to an axial factored load of 2000 kN. The effective length is 3.4 m. Use M 20 concrete and Fe 415 steel.	20 Marks	L3	C03
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******* BEST WISHES *******