Sanjay Ghodawat University, Kolhapur

2020-21

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EXM/P/09/00

Year and Program: T.Y.B.Tech	**School of Technology**	**Department: Civil**
Course Code: CET 301	**Course Title: Design of RCC Structures**	**Semester : V**
Day : Monday **Date : 14.12.2020**	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

Instructions: 1) All Questions arecompulsory.
2) Assume suitable data wherever necessary.
3) Use of IS:456:2000 & IS: 1343:2012 is allowed.

		Marks	Bloom's Level	CO
Q.1	**Answer the following (any Two)**–			
a)	A rectangular beam 230 mm wide and 415 mm deep upto the center of reinforcement have to resist a Bending moment of 35 kNm at working condition. Find the reinforcement required if M20 and Fe 415 are used	8	L_3	1
b)	Compute the moment of resistance of doubly reinforced rectangular beam for the following data, width of beam = 300 mm, overall depth = 450 mm, steel on compression side = 3 bars of 20mm + 2 bars of 16mm, steel on tension side = 6 bars of 20mm, Take effective cover for each reinforcement = 35 mm. Use M15 concrete and Fe415 steel.	8	L_3	1
c)	RC beam 350 mm wide and 550 mm deep is reinforced with 4 numbers of 25 mm bars on tension side with an effective cover of 50 mm. Design the shear reinforcement needed for a factored shear force of 275 kN. Concrete M20 and mild steel.	8	L3	2
Q.2	**Answer the following (any two)** –			
a)	Design simply supported one way slab from following data, Effective span 3.05m, live load = 3kN/m^2, floor finish = 1.0 kN/m^2. Use M20 and Fe 415.	8	L_4	3
b)	Design of two way slab over a room 5m X 6m. The edges of the slab are simply supported and corners are not held down (not restrained). The live load on the slab is 3.0 kN/m^2. The slab has bearing of 300mm on the supporting wall. Use M20 Concrete and Fe 415 steel.	8	L_4	3

c)	Design the section and steel for an axially loaded column, for an ultimate axial load of 900 kN with an effective length of 3.00 m. use M20 grade concrete Fe 415 steel	8	L_3	4

Q.3 Answer the following (any two) –

a)	Design a square isolated pad footing to carry a column load of 1250kN, S.B.C. of soil is 100kN/m^2, unit weight of soil 20 kN/m^3, load factor as 1.5. Use m15 and Fe415.	9	L_4	5
b)	List the advantages and disadvantages of prestressed concrete over Reinforced cement concrete	9	L_1	6
c)	A simply supported prestressed concrete beam of rectangular section 400mm x 600mm is loaded with total UDL of 256 kN over a span of 6m. Sketch the distribution of stresses at mid span section if the prestressing force of 1920 kN . The tendon is straight and located at 200mm above bottom fibre.	9	L4	6

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