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 301R1	Course Title: Design of RCC Structures	Semester : V
Day : Date :	End Semester Examination	Time : 2 Hrs. Max Marks : 50

Question Paper

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 450 mm deep have to resist a Bending moment of 45 kNm at working condition. Find the reinforcement required if M20 and Fe 500 are used. Assume effective cover is 25 mm.	8	L_3	1
b)	Calculate the Ultimate moment of resistance of R.C. rectangular beam section for the following data, width of beam = 300 mm, overall depth = 380 mm, Ast= 6 Nos of 20 mm and Asc = 2 nos of 20 mm.Take effective cover for each reinforcement = 40 mm. Use M20concrete and Fe250 steel.	8	L_3	1
c)	RC beam 300 mm wide and 600 mm deep is reinforced with 4 numbers of 20 mm bars on tension side with an effective cover of 50 mm. Design the shear reinforcement needed for a factored shear force of 250 kN. Concrete M20 and mild steel.	8	L_4	2
Q.2	**Answer the following (any two)** –			
a)	Design simply supported one way slab from following data, Effective span 3.35m, live load = 4kN/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 5m. The edges of the slab are simply supported and corners are held down (restrained). The live load on the slab is 3.0 kN/m^2.floor finish = 1.0 kN/m^2. The slab has bearing of 230mm on the supporting wall. Use M20 Concrete and Fe 415 steel.	8	L_4	3

c)	Calculate the ultimate strength in axial compression of a column 400 mm in diameter and reinforced with 8 nos of 20 mm bars of grade Fe 250 when the column is helically reinforced by # 8 mm bars at 60 mm pitch. Assume M20 concrete. Clear cover equal to 40 mm	8	L_3	4

Q.3 Answer the following (any two) –

a)	Design a isolated rectangular sloped footing for the column of size 230 mm X 650 mm. reinforced with 6 bars of 20 mm diameter and carrying an axial load of 1200 kN. The bearing capacity of the soil is 300 kN/sq.m..Use M20 & Fe 415.Effective cover for bottom steel is 60 mm.Take offset from the face of the column equal to 50 mm	9	L_4	5
b)	Differentiate between 1) pre-tensioning and post tensioning 2) prestress concrete and R.C.C.	9	L_3	6
c)	A pre tensioned beam has a prestress of 1500 kN in the steel immediately after prestressing which eventually reduces to 1250 kN. The beam carries two live loads of 40 kN each in addition to its own weight from both ends. The length of beam is 12 m compute the fiber stresses at mid span under the initial condition	9	L4	6

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