Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

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**

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)	Find the moment of resistance of a beam 250 mm X 500 mm effective, reinforced on tension side with four 20 mm bars. Assume concrete M20 and mild steel..	8	L_3	1
b)	A beam 300 mm X 800 mm effective, is reinforced on tension and compression side with 3940 $mm^2$and 795$mm^2$of steel. The compression steel is placed 40 mm below the Top. If concrete grade M20 and mild steel are used. Find the moment of resistance.	8	L_3	1
c)	A beam 300 mm X 1010 mm effective has a span of 7 m .Total Load on the beam is 45 kN/m. Tensile steel is 6 # 22 mm bars .If concrete M20 and mild steel are used, Design shear reinforcement.			
Q.2	**Answer the following (any two)** –			
a)	Determine area of reinforcement and spacing of bar required for a simply supported one-way slab from following data, Effective span 4.6m, live load =3kN/m^2, floor finish = 1.0 kN/m^2. Use M20 and Fe 500.	8	L_4	3
b)	Determine area of reinforcement and spacing of bar required for a two-way slab over a room 3m X 4m. 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 = 0.75kN/m^2. The slab has bearing of230mm on the supporting wall. Use M20 Concrete and Fe 415 steel.	8	L_4	3
c)	Determine the area of steel required for a short R.C. column 300 X 350 mm in cross section to carry an ultimate axial load of 1200 kN. Assume concrete of grade M20 and steel of grade Fe415.	8	L_3	4

Q.3 Answer the following (any two) –

a)	Determine depth of footing from bending moment consideration for a isolated rectangular sloped footing for the column of size 230 mm X 650 mm. reinforced with 8 bars of 16 mm diameter and carrying an axial load of 1200 kN. The bearing capacity of the soil is 300 kN/sq.m..Use M25 & Fe 500.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)	Describe the various losses in prestressing	9	L4	6

*****