QP Code: RD21BTECH251 | Reg. No | | | | | | | | | | | AY 21

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Fifth Semester Regular) Examinations, December – 2023

21BCVPC35001 – Reinforced Concrete Design

(Civil)

Time: 3 hrs | Maximum: 70 Marks

Answer all questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Draw stress block for a singly reinforced beam in flexture.	CO1	K2
b. Calculate xumav/d value for Fe250 steel.	CO1	K2
c. Differentiate between axial force and shear force.	CO2	K1
d. Explain the necessity of distribution bars n a one way slab.	CO3	K1
e. How can you distinguish between mild steel and tor steel through physical observations ?	CO1	K1

PART – B **(15 x 4 = 60 Marks)**

Answer ***ALL*** questions	Marks	CO #	Blooms Level
2. a. Determine the moment carrying capacity of a beam of size 250mmx 450mm bxd, reinforced with 4x16 as tensile reinforcement. Material used are M20 grade concrete and Fe415 steel.	7	CO1	K3
b. Describe various mix ratios and grades of concrete .	8	CO1	K2
(OR)			
c. Explain Nominal Mix and Design Mix Concrete.	7	CO1	K2
d. Design a simply supported beam of clear span 5m The beam is subjected to a udl of 40 kn/m. Materials used are M20 grade and Fe500 steel.	8	CO1	K3
3.a. Check for deflection of a simply supported beam of clear span 4m. The size of the beam is 230mmx400 mm bxd.	7	CO2	K3
b. Describe the effect of shear force in beams.	8	CO2	K3
(OR)			
c. Design a simply supported beam of size bxd 250mmx400 mm for a shear force of 75KN. The beam is reinforced with 4x12 bars as tensile steel. Use M20 grade concrete and Fe 500 Steel	7	CO2	K3
d. Explain limit state of flexure and limit state of serviceability .	8	CO2	K3
4.a. Compute the load carrying capacity of a circular column of size 300mm and reinforced with 4x20 mm dia Bars. Material used are M20/Fe500steel.	7	CO3	K3
b. Design a column to carry an axial load of 500 KN .Use M15 grade concrete.	8	CO3	K3

(OR)

c.	Design a circular column to carry an axial load of 600 KN .Use M20 grade concrete and Fe 500 steel .Assume any necessary data.	7	CO3	K3
d.	Design a square & rectangular column to carry an axial load of 1000 KN .Use M20 grade concrete and Fe 500 steel .Assume any necessary data.	8	CO3	K3
5.a.	Design a foundation for a rectangular column of size 300x350mm. The axial load on the column is 800 Kn. SBC of soil is 225 kn/m2. use M20 concrete and Fe500 Steel.	7	CO4	K3
b.	List all types of special concrete.	8	CO4	K3

(OR)

c.	Design a foundation for a circular column of size 230mm dia. The axial load on the column is 600 Kn. SBC of soil is 200 kn/m2. use M20 concrete and Fe500 Steel.	7	CO4	K3
d.	List all zones of sand and its test before concrete work .	8	CO4	K3

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