

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, Dec, 2023
B. Tech. (Civil Engineering, Backlog)

Roll No.....

CE1113: Design of RC Structures

Time: 2.5 hours

Max. Marks: 40

Instructions to students:

1. IS:456-2000 is permitted.
2. Do not write anything other than your roll number on question paper.
3. Assume suitable data wherever required and mention it clearly.
4. The values of stress in compressive reinforcement corresponding to strain in Fe 415 is as follows:

Strain in compressive reinforcement	Strain in compressive reinforcement (N/mm ²)	Strain in compressive reinforcement	Strain in compressive reinforcement (N/mm ²)
0.00144	288.7	0.00241	342.8
0.00163	306.7	0.00276	351.8
0.00192	324.8	0.00380	360.9

Q. 1 A simply supported beam 300 mm x 600 mm (effective depth) is reinforced with 5 bars of 25 mm diameter. It carries uniformly distributed load of 80 kN/m including self-weight over effective span of 5.6 m. Assume grade of concrete M-20 and HYSD bars of grade Fe-415. Design shear r/f by using 8 mm diameter 2-legged vertical stirrups. Also find the length of zone where minimum shear r/f is to be provided.

10 Marks LO 2

Q. 2 A slab is simply supported over a clear opening in plan 4.5 m x 10.0 m and width of supports is 300 mm. The Live load plus super imposed dead load (SIDL) on the slab is 12 kN/m². A floor finish with plain cement concrete of thickness 75 mm is provided over the roof. Design the slab by using M-25 & Fe-415.

10 Marks LO 2

Q. 3. Design a reinforced rectangular beam for flexure by using LSM having size 400 mm x 750 mm overall depth (assume effective cover as 50 mm) provided over a span of 6 m. The beam carries live load of 30 kN/m. Assume grade of concrete M-30 and HYSD bars of grade Fe-500.

10 Marks LO 3

Q. 4 Calculate the moment of resistance of a rectangular beam of size 500 X 750 mm which is reinforced with

- a) 4-16 mm ϕ
- b) 8-18 mm ϕ
- c) 6-25 mm ϕ

Use M 25, Fe415 Assume effective cover = 50 mm.

10 Marks LO 3