

Column reinforcement:

Longitudinal reinforcement = 6 bars of 25mm dia

Helical reinforcement = 8mm dia @ 75 mm Pitch

Footing Detail:

Size of footing = 2.5 m x 2.5 m

Thickness of footing at column face = 600 mm

Reinforcement = 12 mm dia @ 170 mm c/c both ways

Q.28 Draw the plan and sectional elevation of a two way slab from the following data:

Size of the room = 6m x 4m

Bearing on walls = 150mm

Thickness of the wall = 300 mm

Thickness of the slab = 150 mm

Reinforcement along both the span = 10 mm dia bars @ 120 mm C/C with alternate bars bent up at 1/7

Q.29 Draw to a suitable scale cross-section of a head connection of two beams on both sides of a column as per data given below:

Column : Size of column = 500 x 500 mm

Main reinforcement = 8-16 mm dia

Lateral ties = 8mm dia 200 mm c/c (double ties)

Beams : Size of beams = 250 mm x 450 mm (Including 100 mm thick slab)

Main bars = 5-16 mm dia (out of which two bars are bent up at L/7 from centre of column)

Vertical stirrups = 8 mm dia 2 legged stirrups @ 200 c/c

Anchor bars = 2-12 mm dia

No. of Printed Pages : 4

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Roll No.

5th Semester/Civil
Subject : RCC Design & Drawing

Time : 6 Hrs.

M.M. : 120

SECTION-A

Note: Multiple choice questions. All questions are compulsory
(6x1=6)

Fill in the blanks:-

- Q.1 The reinforcing steel bars are also known as _____.
- Q.2 Unit weight of R.C.C. is _____ N/m³.
- Q.3 The depth of N.A. _____ with the increase in compression steel.
- Q.4 The minimum area of reinforcement in a slab is _____ of cross sectional area for Fe-415 steel.
- Q.5 Effective cover is taken upto _____ of reinforcement.
- Q.6 With increase in (ly/lx) ratio, the value of bending moment of factor is _____.

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory.
(6x1=6)

- Q.7 Steel columns are generally termed as _____.
- Q.8 Cover to longitudinal steel in columns should not be less than _____.
- Q.9 A footing that supports a single column is known as _____ footing.

State True or False:

- Q.10 Concrete gains 100% strength after 28 days.

- Q.11 M30 and higher grades may be used for post-tensioning pre-stressed concrete members.
- Q.12 Vertical Stirrups are generally made of bars from dia. 6 mm to 10mm.

SECTION-C

- Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)
- Q.13 Give advantages and disadvantages of R.C.C. (Any four)
- Q.14 Draw a neat section showing the following:
a) Effective depth b) Effective cover
- Q.15 Describe type of Beam sections.
- Q.16 Write short notes on limit state method & working stress method.
- Q.17 Why main reinforcement is provided along the shorter span in one way slabs?
- Q.18 Define the following terms:
a) Column
b) Effective length of column
c) Longitudinal reinforcement
d) Footing
- Q.19 Describe specification for longitudinal & lateral Reinforcement as per IS-456.
- Q.20 Write I.S. specification for materials used in pre-stressed concrete.
- Q.21 Find M.O.R. for beam having width 300mm, effective depth 500 mm with 5 No. 20 mm dia. Bar Take stress in steel 230 N/mm² and is concrete 7 N/mm².
- Q.22 A singly reinforced beam having size 250mm x 500mm (effective) is reinforced with 4 bars of 20 mm dia. Using M20 grade of concrete and Fe-415 steel, calculate the limiting moment of resistance of the section.

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SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x8=16)
- Q.23 Explain various method prestressing with neat sketch diagram.
- Q.24 Design a simply supported R.C.C. one way slab to carry a factored load of 16kN/m² (including self weight) on an effective span of 3.1 m. Bearing on wall 300 mm. Use M20 grade of concrete and Fe-415 grade of steel. Assume any other missing data.
- Q.25 Write design steps for one way R.C.C. Slab.

SECTION-E

- Note:** Long answer type questions. Attempt any three questions out of four questions. (3x20=60)
- Q.26 Draw to a suitable scale longitudinal section and x-section of a simply supported R.C.C. beam with the following data:-
Clear span of the beam = 4.0m
Depth of the beam = 400 mm
Width of the beam = 200 mm
Bearing of the beam = 400 mm
Main reinforcement = 4 Nos.. 16 mm diameter bars.
Shear reinforcement = 2 legged 8 mm dia vertical stirrups @ 200 mm c/c Bearing of the beam = 400 mm
Anchor bars = 2 Nos. 10 mm diameter bars
- Q.27 Draw the sectional plan and elevation of a circular column from the following data:
Diameter of column = 450mm
Depth below G.I = 1m
Plinth level above GL = 450 m
Height of ceiling Above PL = 3.25 m

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