

RCC DRAWING
5th Exam/Civil/4511/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs.

M.Marks:75

**Note: Use of Scientific calculator is allowed. Assume any missing data
Attempt any three questions.**

3x25=75

Q1. Draw sectional plan and sectional elevation of a simply supported one way slab with the following data:

Size of room =	3.5m x 7.5m
Thickness of slab =	150 mm
Bearing on wall =	300 mm
Thickness of wall =	500 mm
Reinforcement details of HYSD bars.	
Main bars =	12 mm ϕ bars @ 150 mm c/c (with alternative bars bent up)
Distribution steel =	10 mm ϕ bars @ 200 mm c/c.
End Cover =	15 mm

Q2. Draw to a suitable scale L-section and a cross-section of a simply supported RCC beam from the following data:

Size of beam =	300 mm x 1000 mm
Clear span =	6.5 m
Bearing on wall =	300 mm
Main reinforcement =	4 – 20 mm ϕ
Side face reinforcement =	2 number 12 mm diameter bars on each face
Anchor bars =	2 – 12 mm ϕ bars
Shear Stirrups =	8 mm ϕ 2 legged @ 200 mm c/c
Use HYSD steel and also prepare bar bending schedule.	

Q3. Draw to a suitable scale the cross-sections (one near support and other near the free end) along with L-section of a cantilever beam with the following data span projecting beyond support = 3 m

Size of beam (at fixed end) =	300 mm x 600 mm
Size of beam (at free end) =	300 mm x 200 mm
Main reinforcement =	4-20 mm ϕ (out of which two bars are curtailed at 1.80 m from the fixed end)
Wall thickness and Bearing =	400 mm
Shear stirrups =	8 mm ϕ 2 legged @ 300 mm c/c
Anchor bars =	2 – 12 mm ϕ
Use HYSD steel and also prepare bar bending schedule.	

Q4. Draw to a suitable scale, the sectional plan and elevation of a square column with isolated footing from the following data:

Column Details

Size of column =	500 mm x 500 mm
Reinforcement longitudinal bar =	8 – 20 mm ϕ
Transverse Ties =	8 mm ϕ @ 300 mm c/c (Double ties)
Base reinforcement =	12 mm ϕ @ 200 mm c/c both ways
Height of column =	3.6 m

Footing Details

Size of footing =	3.0 m x 3.0 m
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Thickness of footing at column face = 700 mm

Thickness of footing at free end = 400 mm

Depth below G.L. = 1.2 m

Plinth level above G.L. = 350 mm

Q5. 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 = 450 mm x 450 mm

Main bars = 8-16 mm ϕ bars

Lateral ties = 8 mm ϕ @ 250 mm c/c (Double ties)

Size = 300 mm x 450 mm (including 100 thick slab)

Beams:

Main bars = 5-16 mm ϕ (2 bars bent-up at $l/7$ from centre of column)

Stirrups = 8 mm ϕ 2 legged stirrups @ 250 mm c/c

Anchor bars = 2 - 12 mm ϕ

Also show plan of a column.

Q6. Draw to a L-section and two cross-sections, near support and mid span of a doubly reinforced beam from the following data:

Size of beam = 300 mm x 500 mm

Clear span = 4.5 m

Bearing on wall = 400 mm

Main tensile reinforcement = 3 bars of 20 mm ϕ (one bar bent up at $l/7$)

Compression reinforcement = 2 - 16 mm ϕ

Shear Stirrups = 8 mm ϕ 2 legged @ 200 mm c/c throughout.

Also prepare bar bending schedule.

P.S.B.T.E. & I.T.