Thickness of slab = 125 mm

Bearing on walls = 150 mm

Thickness of walls = 300 mm

Main reinforcement = 12 mm f HYSD bars @ 140 mm c/c with alternate bars bent up at 1/7

Distribution steel = 10 mm f HYSD bars @ 190 mm c/c

Q.10 Draw a suitable scale sectional plan and sectional elevation of a square column with an isolated footing of uniform thickness from the following data: (CO3)

Size of column = 500 mm x 500 mm

Depth below G.L. = 1.0 m

Plinth level above ground level = 300mm

Height of ceiling above plinth level = 3.3 m

Column reinforcement:

Main reinforcement = 4-25 mm f at corners and 4-20 mm f at mid of side of column

Lateral ties = 10 mm f @ 300 mm c/c for corner steel and 8mm f @ 300 mm c/c for mid steel

Footing Details:

Size of footing = 2.1m x 2.1m

Thickness of footing at column face = 750 mm

Thickness of footing uniform = 300 mm

Reinforcement = 12 mm f bars @200 mmc/cboth ways.

Assume that main bars of column extend by 12f laterally into the 130 mm slab and also in column footing.

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5th Sem / Branch : Civil

Sub.: Reinforced Concrete Drawing

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x2=20)

Q.1 Define the following:

a) Nominal diameter of steel bars (CO1)
b) Two - way slab (CO1)
c) Effective span (CO2)
d) Singly reinforced beam (CO2)
e) Long column (CO3)
f) Foundation (CO3)
g) Grades of steel (CO4)
h) Stair (CO5)
i) RCC (CO1)
j) Helical reinforcement (CO3)
k) The unit weight of PCC is _____ (CO1)
l) Co-efficient of linear expansion of steel is _____. (CO1)

SECTION-B

Note: Attempt any FOUR parts. (10x4=40)

Q.2 Draw to a suitable scale the cross-section of an end connection of column with a beam from the following data: (CO3)

Column

Size : 400 mm x 400 mm

Main bars : 8 - 16 mm Ø

Lateral Ties : 8mm Ø @ 200 mmc/c (Double Ties)

Beam

Size : 200 mm x 400 mm

Main bars : 5 - 20 mm Ø (2 bars bent up at L/7)

Stirrups : 8mm Ø 2 legged stirrups @ 220 c/c

Anchor bars : 2 - 12 mm Ø

Q.3 Name the different types columns depending upon materials used in their construction and draw their cross-sections. (CO3)

Q.4 Draw the L-section of a simple supported beam with the following data: (CO2)

Size of beam = 300 mm x 500 mm

Clear span of beam = 3.4 m

Bearing on walls = 230 mm

Thickness of walls = 300 mm

Main reinforcement = 4-20 f HYSD bars (out of which two bar is bent-up at 1/7 from the center of support)

Vertical stirrups = 8mm f 2 legged @ 210 mm c/c

Anchor bars = 2-16 mm f

Q.5 Prepare the bar bending schedule and calculate the quantity of steel to be used in the simply supported beam with the data as given in Question No. 4 (CO2)

Q.6 Draw the sectional elevation of a cantilever slab having an overhang of 1.5m from the following data: (CO1)

Main steel : 12mm f @ 140 mm c/c

Distribution steel = 8mm f @ 180 mm c/c

Thickness of slab at fixed end = 140mm

Thickness of slab at free end= 110 mm

Thickness of wall and bearing = 300 mm

Length of slab = 2.5 m

Q.7 Prepare the bar bending schedule and calculate the quantity of steel to be used in the cantilever slab with the data as given in Question No. 6 (CO1)

SECTION-C

Note: Attempt any TWO parts. (20x2=40)

Q.8 Draw to a suitable scale the longitudinal section and two cross - section (one at the mid - span and other near the support) for a simply supported R.C.C. Beam having the following data: (CO2)

Size of beam : 300 mm x 500 mm

Clear span of beam = 4.6 m

Bearing on walls = 300 mm

Thickness of walls = 400 mm

Main reinforcement = 3-20 f HYSD bars (out of which one bar is bent-up at 1/7 from the centre of support)

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

Anchor bars = 2-12 mm f

Q.9 Draw to a suitable scale sectional plan and sectional elevation of a simply supported one - way slab with the following data: (CO1)

Size of room : = 3m x 6 m