Reinforcement parallel to shorter side = 16 mm Ø 200 mm c/c

Column reinforcement :

Main longitudinal bars in column = 6-20 mm Ø

Lateral ties in column = 8 mm Ø @ 250 mm c/c

Q.9 Draw the sectional plan and sectional elevation (assume suitable scale) of a RCC cantilever beam with the following data:

Size of beam = 300 mm X 500 mm (at fixed end)

=300 mm X 220 mm (at free end)

Clear span = 3.5 m

Wall thickness = 300 mm

Main reinforcement = 4-16 mm Ø bars (out of which two bars are curtailed)

Anchor bars = 2-12 mm Ø

Shear stirrups = 8 mm Ø 2 legged @ 280 mm c/c

Q.10 Draw to a suitable scale the sectional elevation of a cantilever R.C.C slab having an overhang of 1.5m from the following data:

Main Reinforcement   = 10mm φ HYSD bars @ 130 mm c/c

Distribution steel   = 8 mm φ HYSD bars @ 190 mm c/c

Thickness of slab at fixed end = 140 mm

Thickness of slab at free end = 100 mm

Thickness of wall & bearing = 230 mm

Width of slab   = 2.5 m

5th Sem. / Civil Engineering

Subject : Reinforced Concrete Drawings

Time : 3 Hrs.   M.M. : 100

SECTION-A

Note: Short Answer type questions. Attempt any 10 parts.   (10x2=20)

Q.1 Define the following :

a) Dead load   (CO1)

b) One-way slab   (CO1)

c) Clear span   (CO2)

d) Doubly reinforced beam   (CO2)

e) Short column   (CO3)

f) Footing   (CO3)

g) Portal frame   (CO4)

h) Auto CAD   (CO5)

l) PCC   (CO1)

j) Pitch of lateral ties   (CO3)

k) The unit weight of RCC is _____   (CO1)

l) Co-efficient of linear expansion of concrete 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: (Co4)

Column

   Size : 450 mm X 450 mm

   Main bars : 4 - 20 mm Ø and 4 - 16 mm Ø

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

Beam

   Size: 200 mm X 400 mm

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

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

   Anchor bars: 2 - 12 mm Ø

Q.3   Name the different types columns depending upon their shape and draw their cross- section.

Q.4   Draw the L-section of a simply supported beam with the following data:

     Size of them   = 350mm x 500 mm

     Clear span of beam = 4.0 m

Bearing on walls   = 250 mm

Thickness of walls   = 300 mm

Main reinforcement   =4-25 ϕ HYSD bars (out of which two bar is bent-up at 1/7 from the center of support)

Vertical stirrups   = 10 mm ϕ 2 legged @ 210 mm c/s

Anchor bars   = 2-20 mm ϕ

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_____

Q.6   Draw the cross-section of a restrained two way slab from the following data:

Size of room = 6 m X 4 m

Thickness of walls = 230 mm

Thickness of slab - 150 mm

Bearing on walls= 150 mm

Reinforcement along shorter span = 10 mm Ø 120 mm c/c

Reinforcement along the longer span= 10 mm Ø 190 mm c/c

Torsion reinforcement at all four corner in the form of mesh of 10 mm Ø 100 mm c/c both ways extended up-to sorter span over 5.

Q.7   Prepare the bar bending schedule and calculate the quantity of steel to be used in two way slab with the data as given in Question No.................

SECTION-C

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

Q.8   Draw the sectional plan and sectional elevation (assume suitable scale) for a rectangular column with isolated footing of uniform thickness with the following data:

Size of Column= 300 mm X 500 mm

Size of footing = 1500 mm X 2000 mm

Thickness of footing = 500 mm

Depth below ground level = 1000 mm

Plinth level above ground level = 300 mm

Height of ceiling above plinth level = 3000 mm

Footing reinforcement :

Reinforcement parallel to longer side = 12mm Ø 250 mm c/c