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Roll No.

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5th Sem / Branch : Civil Engineering
Sub. : Reinforced Concrete Drawing

Time : 3Hrs.

M.M. : 100

SECTION-A

Note: Very short answer type question. Attempt any 10 question.
(10x2=20)

Define the following terms :

- | | | |
|------|---------------------------|--------|
| Q.1 | Nominal Diameter. | (CO-1) |
| Q.2 | Doubly reinforced beam. | (CO-2) |
| Q.3 | Modular ratio. | (CO-1) |
| Q.4 | Lever arm | (CO-2) |
| Q.5 | Lap length of bars. | (CO-3) |
| Q.6 | Effective span. | (CO-1) |
| Q.7 | Under reinforced section. | (CO-2) |
| Q.8 | Two way slab. | (CO-1) |
| Q.9 | short column. | (CO-3) |
| Q.10 | Isolated footing. | (CO-4) |

SECTION-B

Note: Objective type questions. Attempt any three questions .
(10x3=30)

- Q.11 Draw the sectional elevation of a circular column from the following data: (CO-3)
- Diameter of column = 500 mm
Depth below G.I. = 1.2 m
plinth level above G.I = 500 mm
Height of ceiling above plinth level = 3.3 m
Column reinforcement:

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Longitudinal reinforcement = 6 bars of 25 mm dia
Helical reinforcement = 8mm dia @ 80 mm pitch

Footing details:

Size of footing = 3.1 m x 3.1 m

Thickness of footing at column face = 900 mm

Reinforcement = 12mm dia bars @ 190 mm c/c
both-ways

- Q.12 Draw the longitudinal section of a simply supported RCC beam with the following data: (CO-2)

Size of beam = 300 mm x 1000 mm

Clear span = 8.5 m

Bearing on walls = 500 mm

Main tensile reinforcement = 4 bars of 25 mm dia

Compression reinforcement = 2 bars of 16 mm dia

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

Side face reinforcement = 2 bars of 10 mm dia
on each face

- Q.13 DRAW the cross-section of an end column with beam from the following data: (CO-4)

End column:

Size of column = 250mm x 250 mm

Main reinforcement = 8 bars of 12 mm dia

Lateral ties = 8mm dia @ 180 mm c/c

Beam:

Size of beam = 250mm x 250 mm

Main bars = 4 bars of 20 mm dia (out of which
two bars are bent up at L/7)

Vertical stirrups = 8mm dia 2 legged @ 190mm c/c

Anchor bars = 2 bar on 12 mm dia

- Q.14 Draw the sectional plan and elevation of a cantilever RCC

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slab having an overhang of 1.6m from the following data:
(CO-1)

Main reinforcement=10 mm dia bars @ 140 mm c/c
Distribution steel = 8mm dia bars @ 190mm c/c
Thickness of slab at fixed end=140 mm
Thickness of slab at free end = 105 mm
Thickness of wall and bearing = 300 mm
Width of slab = 2.4m

SECTION-C

Note: Long answer type questions. Attempt any two questions out of three questions. (25x2=50)

Q.15 Draw the X-section along the longer span and bottom plan of reinforcement of a two-way RCC slab from the following data:

Size of room = 5m x 6.5m
Thickness of slab = 200 mm
Bearing on walls ; 160 mm
Reinforcement parallel to shorter span (with alternate bars bent-up at 750 mm from edge of slab):

- a) Middle strip = 10mm dia @ 160 mm c/c
- b) Edge strip = 10mm dia @ 300 mm c/c

Reinforcement parallel to longer span (with alternate bars bent-up at 960 mm from edge of slab):

- a) Middle strip = 10 mm dia @ 190 mm c/c
- b) Edge strip = 10 mm dia @ 350 mm c/c

Torsional reinforcement (both top and bottom : 1060 from edge of slab):

- a) 10 mm dia bars @ 160 mm c/c parallel to shorter span
- b) 10 mm dia bars @ 190 mm c/c parallel to longer span

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Q.16 Draw the sectional plan and elevation for a rectangular column with isolated footing of uniform thickness with the following data: (CO-3)

Size of column = 230 mm x 500 mm
Dept below GL = 1100 mm
Plinth level above GL = 350 mm
Height of ceiling above plinth level = 3.1 m
Size of footing = 2.5 m x 1.25 m
Thickness of footing = 600 mm
Column reinforcement:

Longitudinal bars = 6 bars of 25 mm dia
Lateral ties = 8mm dia @ 270 mm c/c

Footing reinforcement:

Along longer side = 12 mm dia @ 190 mm c/c
Along shorter side = 16 mm dia @ 180 mm c/c

Q.17 Draw the longitudinal section and two cross-sections (one at mid span and other near the support) of a doubly reinforced RCC beam with the following data: (CO-2)

Size of beam = 300 mm x 500 mm
Clean span = 5.0 m
Bearing on walls = 300 mm
Main tensile reinforcement = 5bars of 20mm dia in two tiers.

(3 bars in the lower tier and 2 bars in the upper tier)
The bars of the upper tier are bent-up at L/7 from centre of support.

Spacer bars = 20 mm dia @ 1 m c/c
Compression reinforcement = 2bars of 12 mm dia
Shear stirrups = 8mm dia 2 legged @ 190 mm c/c

(1460)

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