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C09–C–607

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BOARD DIPLOMA EXAMINATION, (C–09)

JUNE—2019

DCE—SIXTH SEMESTER EXAMINATION

STRUCTURAL ENGINEERING DRAWING

Time : 3 hours] [*Total Marks* : 60

PART—A 4×5=20

Instructions : (1) Answer **all** questions.

(2) Each question carries **four** marks.

(3) Answer the questions for not to scale.

(4) Assume suitable data, if necessary.

1. What is structural planning? Explain in four sentences.

2. Draw the layout plan indicating the position of columns and beam positions with grid reference scheme for a six-room residential building.

3. Draw the cross-section of a lintel cum sunshade at midspan with the following specifications :

Lintel :

Clear span	1200 mm
Size of lintel	230 mm × 300 mm
Bearing on either side	150 mm
Bottom bars	3 nos.—10 mm dia (out of which one bar is cranked)
Top bars	2 nos.—8 mm dia
Stirrups	6 mm dia—150 mm centre to centre

Sunshade :

Width of sunshade	600 mm
Tickness of sunshade	60 mm (uniform)
Main bars	8 mm dia at 150 mm centre to centre
Distribution bars	6 mm dia at 150 mm centre to centre
Covers	15 mm

4. Prepare the bar bending schedule of the simply supported singly reinforced RCC beam with the following specifications :

Size of the beam	300 mm × 600 mm
Clear span	5000 mm
Support width	230 mm
Main reinforcement	3 nos.—20 mm dia bars (out of which one bar is cranked at 45° inclination)
Anchor bars	2 nos.—10 mm dia bars
Stirrups	8 mm dia at 150 mm centre to centre throughout
Weight of bars	20 mm dia—24·8 N/m
	10 mm dia—6·2 N/m
	8 mm dia—3·9 N/m
Covers	25 mm

5. Draw the details for the following for earthquake effective area :

(a) Beam-column joint in a frame

(b) Transverse reinforcement for column

PART—B

20×2=40

Instructions : (1) Answer **all** questions.

(2) Draw all questions to suitable scale.

(3) Assume suitable data wherever necessary.

6. Draw the longitudinal section of the dog-legged staircase showing details of reinforcement. (Draw for single flight only)

(i) Size of staircase room 2500 mm × 5000 mm

(ii)	Height of floor	3600 mm
(iii)	Width of staircase	1200 mm
(iv)	Thickness of waist slab	150 mm
(v)	Thread	300 mm
(vi)	Rise	150 mm
(vii)	Projection into basement	300 mm × 400 mm
(viii)	Covers	20 mm
(ix)	Width of the wall around	300 mm

(x) Reinforcement details :

Main bars	12 mm dia at 100 mm centre to centre at midspan and alternate bars are cranked bottom
Distribution bars	8 mm dia at 150 mm centre to centre
Additional bars	12 mm dia at 100 mm centre to centre at junction of landing slab and waist slab, extended up to 1000 mm from junction, downwards into waist slab

7. Draw the following views of a simply supported one-way slab : 6+7+7=20

(a) Cross-section along short span

(b) Top plan, showing reinforcement

(c) Bottom plan, showing reinforcement

Specifications :

Internal dimensions of a room	3000 mm × 8000 mm
Wall width	300 mm
Slab thickness	150 mm

Reinforcement details :

(i)	Main bars	10 mm dia at 180 mm centre to centre, alternate bars cranked at 450 mm from either support
(ii)	Distribution bars	8 mm dia at 200 mm centre to centre
(iii)	Covers	20 mm

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