C20-C–**507**

7624

BOARD DIPLOMA EXAMINATION, (C-20)

DECEMBER—2022

DCE – FIFTH SEMESTER EXAMINATION

STRUCTURAL ENGINEERING DRAWING

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

PART—A

10×2=20

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

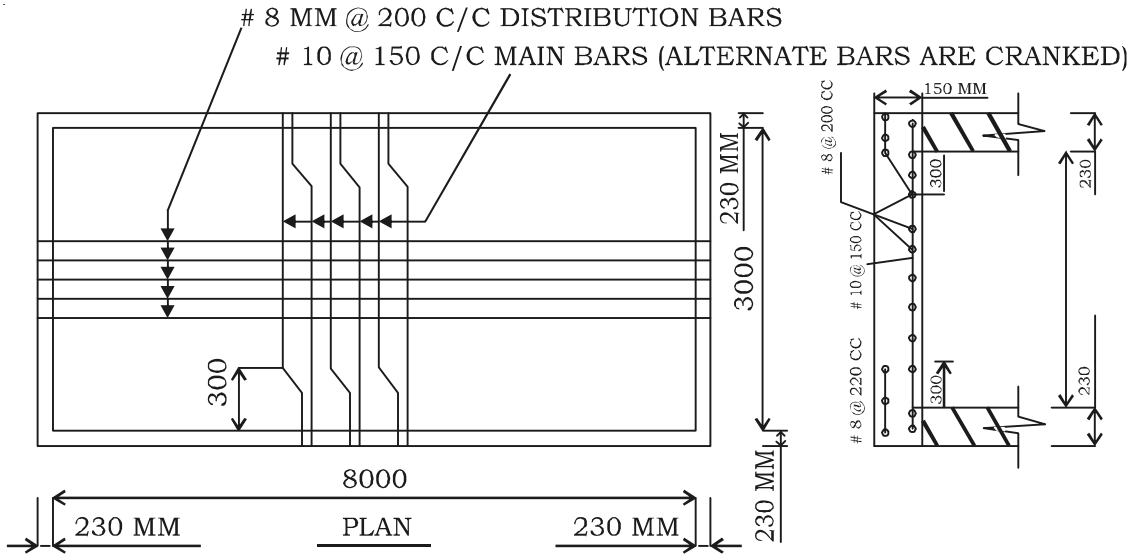
(2) Each question carries **ten** marks.

(3) Part—A may not be drawn to a scale.

(4) Any missing data may be assumed suitably.

1. Explain the spanning of slabs with the help of relevant diagrams.

2. Prepare the bar bending schedule and find the total quantity of steel required for the one-way slab shown in the figure below :



PART—B

20×2=40

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

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

(3) **All** questions must be drawn to scale.

(4) Any missing data may be assumed suitably.

3. Draw the reinforcement details of an isolated square footing with a column using the following specifications :

Draw to a scale of 1 : 15

(a) Plan 10

(b) Sectional elevation 10

Specifications :

(a) Size of the column : 400 mm × 400 mm, *(b)* size of the footing : 2200 × 2200 mm, *(c)* Thickness of the footing : 450 mm and *(d)* Base coarse thickness : 150 mm with P.C.C – (1 : 2 : 4)

Reinforcement :

For footing : 12 mm dia bars @ 120 mm c/c in both the directions at bottom with a clear cover of 50 mm. The horizontal lap length of the column reinforcing bars is 500 mm each.

For column : Main Bars : 16 mm dia bars – 4 nos, Lateral ties : 6 mm dia ties @ 220 mm c/c

Covers : All the covers are 50 mm.

Materials Used : Concrete : M20 grade concrete, Steel : Fe-415 steel

4. The details of a simply supported two-way slab whose corners are held down are given below with the following specifications :

Specifications :

Size of the room : 5 × 6 m with overall depth of slab 150 mm

Bearing on walls : 300 mm

Reinforcement :

Along the shorter span :

In the middle strip : 12 mm @ 200 c/c

In the edge strip : 12 mm @ 300 c/c

(Alternate bars are cranked at a distance of 500 mm from the face of the support)

Along Longer span :

In the middle strip : 10 mm @ 220 c/c

In the edge strip : 10 mm @ 300 c/c

(Alternate bars are cranked at a distance of 600 mm from the face of the support)

Torsion reinforcement : In the form of mesh 900 × 900 mm in four layers with 8 mm bars, 10 nos in each layer at all the four corners.

Covers : All covers are 20 mm

Draw the following views to show reinforcement details to a suitable scale :

(a) Bottom plan of the reinforcement 10

(b) Cross-section along the longer span at mid span 10

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