



C16-C-406

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BOARD DIPLOMA EXAMINATION, (C-16)  
OCTOBER—2020  
DCE—FOURTH SEMESTER EXAMINATION  
CIVIL ENGINEERING DRAWING—II

Time : 3 hours ]

[ Total Marks : 60

PART—A

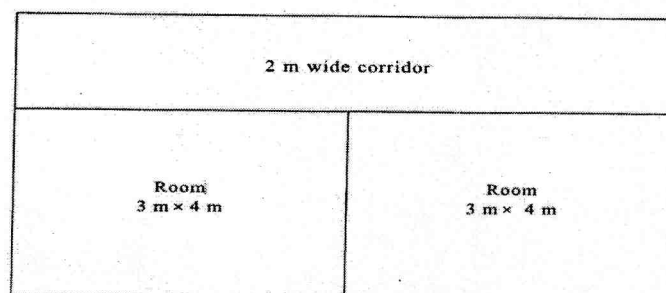
4×5=20

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

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

(3) Any missing data may be assumed suitably.

1. Draw the layout plan indicating the positioning of columns and beams for the line diagram shown below.



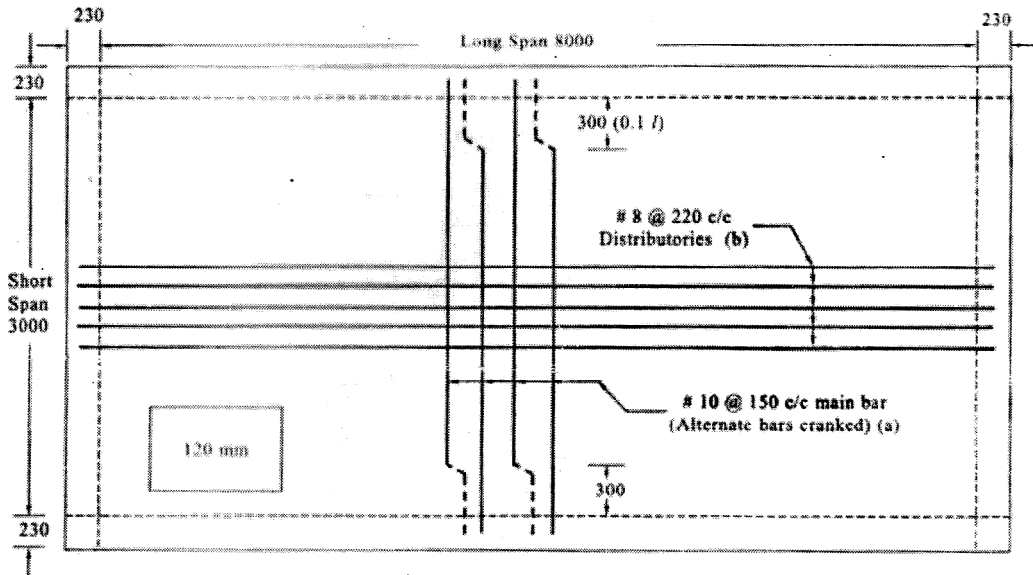
2. State any four guiding principles for positioning of beams in the structural planning of the buildings.
3. Show how torsion reinforcement is provided in two way slabs with corners held down assuming all the four edges are discontinuous.

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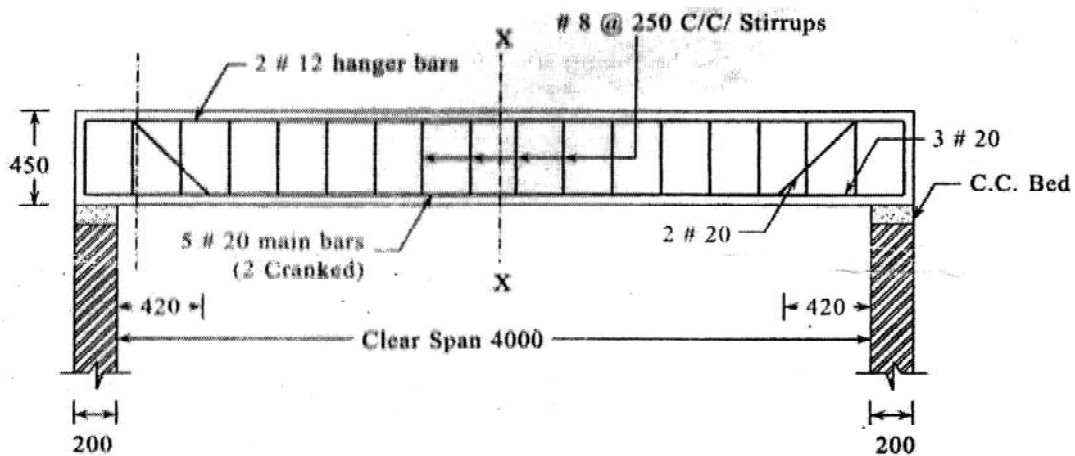
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4. Prepare the bar bending schedule and find the total quantity of steel required for the one way slab shown below. Assume all covers as 20 mm.



PLAN

5. Prepare the Bar bending schedule and find the quantity of steel required for the main reinforcement for the simply supported beam shown below. Top and bottom covers are 25 mm and side cover is 40 mm.



LONGITUDINAL SECTION

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**PART—B**

20×2=50

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

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

(3) Any missing data may be assumed suitably.

**6.** Draw the reinforcement details showing the bottom and top plans of a simply supported two way slabs whose corners are held down with the following specifications of a scale of 1 : 50. 10+10

(i) Size of the room : 4·8 m × 6·2 m

(ii) Edge conditions : Simply supported, corners held down

(iii) Overall depth of the slab : 160 mm

(iv) Bearing on walls : 300 mm

(v) Reinforcement :

Along shorter span : In middle strip 12 mm and 150 mm c/c, In edge strip 12 mm at 300 c/c (Alternate bars cranked at a distance of 480 mm from the face of the support)

Along longer span : In middle strip 10 mm at 200 mm c/c, In edge strip 10 mm at 300 c/c (Alternate bars cranked at a distance of 620 mm from the face of the support)

Torsion reinforcement : In the form of mesh 990 mm × 990 mm in four layers with 8 mm bars 10 nos. in each layer at all the four corners.

Covers : Assume all covers as 20 mm

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7. Draw the <sup>\*</sup>plan and section showing the reinforcement details of an isolated footing for a column to a scale of 1 : 20 with the following specifications : 10+10

- (i) Size of the column : 400 mm × 400 mm
- (ii) Size of the footing : 2000 mm × 2000 mm
- (iii) Thickness of the footing : 450 mm uniform
- (iv) Base course thickness : 150 mm with PCC 1 : 3 : 6

Reinforcement : For footing : 12 mm bars at 160 mm c/c in both the directions at bottom with a clear cover of 50 mm. The horizontal lap length of the column bar is 500 mm each.

For Column : Main bars : 16 mm 4 nos.

Lateral ties : 8 mm at 200 mm c/c

Covers : All the covers are 50 mm

Materials used : Concrete : M-20 Grade and  
Steel : Fe-415 Grade

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