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c14-c-607

4721

**BOARD DIPLOMA EXAMINATION, (C-14)
SEPTEMBER/OCTOBER - 2020
DCE—SIXTH SEMESTER EXAMINATION
STRUCTURAL ENGINEERING DRAWING**

Time : 3 hours]

[Total Marks : 60

PART—A

4×5=20

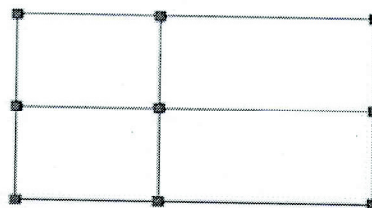
Instructions : (1) Answer **all** questions.

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

(3) Any missing data may be assumed suitably.

(4) Part—A may be drawn not be scale.

- 1.** Redraw the following line diagram and name the columns and beams as per Grid Reference Scheme (not to scale) :



- 2.** Draw the cross-section of beam at support with the following specifications :

Width of beam = 230 mm

Overall depth of beam = 450 mm

Effective cover = 50 mm

Top and side cover = 25 mm

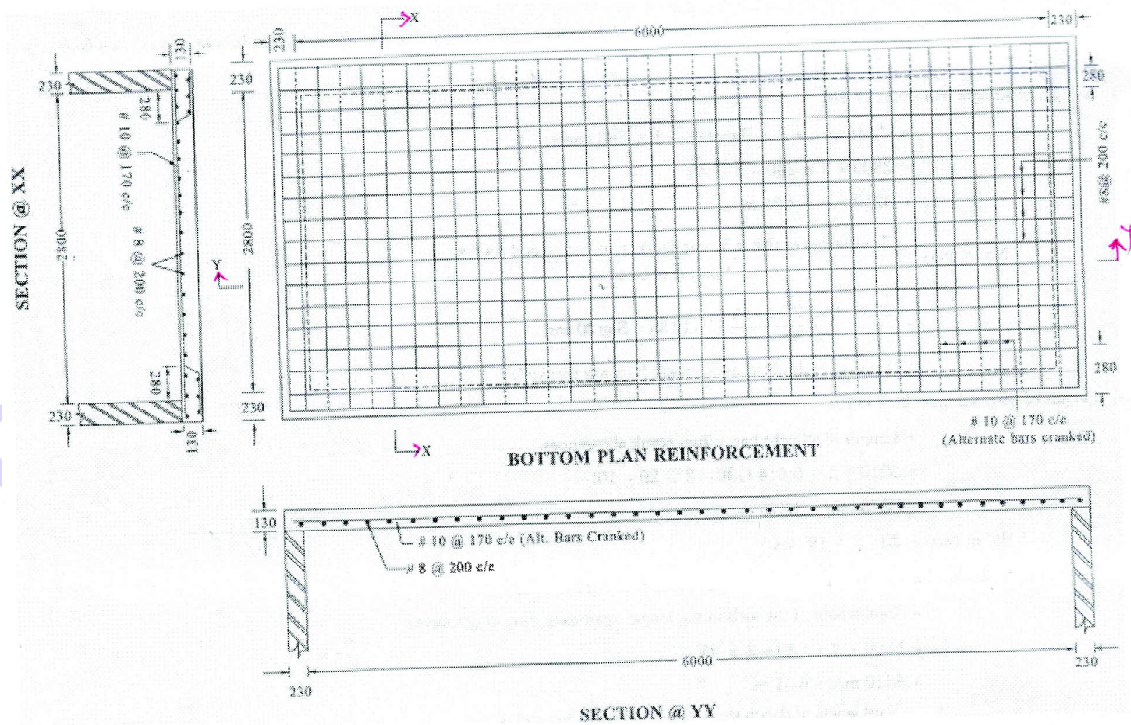
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Main reinforcement	= 4 Nos of 20 mm diameter of which 2 bars are cranked
Hanger bars	= 2 Nos of 12 mm diameter
Stirrups	= 8 mm dia, 2-legged bars

3. Draw the plan to doglegged staircase room with the following specification :

Size of room	= 2100 × 4700 mm
Height of floor	= 3300 mm
Tread	= 270 mm
Rise	= 150 mm
Width of stair	= 1000 mm
Wall thickness of room	= 230 mm

4. Prepare bar bending schedule for the one-way slab shown in figure :



- * 5. Drawing the cross-section of built up column at intermediate batten with the following specifications :

Column Section = 2—ISMC 250@30.4kg/m, placed back to back at 150 mm apart (width of channel section is 80 mm)

Intermediate batten = 250 mm deep and 6 mm thick are connected to channel section with 22 mm ϕ rivets—2 Nos with c/c distance between them is 240 mm

PART—B

20×2=40

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

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

(3) Any missing data may be assumed suitably.

6. Draw (a) cross-section and (b) longitudinal section of the lintel with sunshade to 1 : 10 scale with the given specifications.

A lintel with sunshade is provided over an opening of 1200 mm. Bearing on either side of the wall is 150 mm. Width of the wall and lintel is 230 mm. Overall depth of lintel is 200 mm. Lintel is provided with 4 bars of 12 mm diameter as main reinforcement, middle bars are cranked at a distance of 200 mm from either side of the support and two bars of 10 mm diameter as anchor bars. 2-legged stirrups of 6 mm diameter are provided at 150 mm center to center.

Projection of sunshade is 600 mm with thickness of 100 mm at the fixed end and 60 mm at the free end. Main bars of 10 mm diameter at 140 mm c/c and distribution bars of 6 mm diameter at 120 mm c/c.

Use M-20 grade concrete and Fe-415 grade steel.

Bottom clear cover to lintel is 30 mm, top clear cover for sunshade is 20 mm and all remaining covers are 25 mm.

- * **7.** From the given specifications of a built up beam, draw the following :

(a) Plan

(b) Longitudinal section

(c) Cross-section at mid span

Span between the supports = 10000 mm

Width of support = 300 mm

Built up beam consists of an ISMB 600@122.6kg/m (From steel tables ISMB 600@122.6kg/m, width of flange 210 mm, $t_w = 12.0$ mm, $t_f = 20.8$ mm) is provided with two flange plates of size 280×12 mm both at top and bottom flanges, outermost flange plates are curtailed at distance 1000 mm from face of the support.

Provide suitable connections (welded/riveted)

Provide suitable bearing plate.
