



c09-c-607

3728

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2016

DCE—SIXTH SEMESTER EXAMINATION

STRUCTURAL ENGINEERING DRAWING

Time : 3 hours]

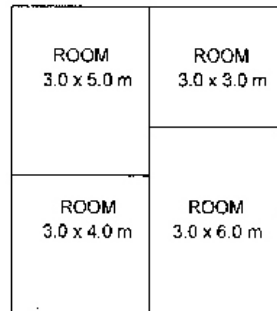
[Total Marks : 60

PART—A

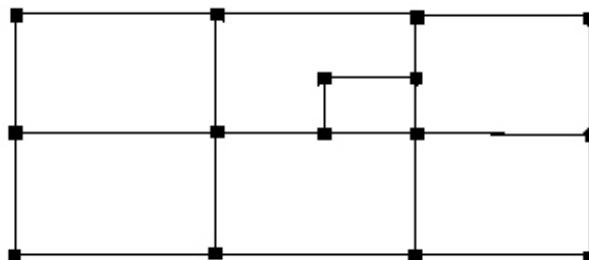
4×5=20

- Instructions :** (1) Answer **all** questions.
(2) Each question carries **four** marks.
(3) Part—A may be drawn not to a scale.
(4) Assume suitable data, if necessary.

1. Draw the plan of the given line diagram by properly indicating the position of columns and beams :



2. Draw the following plan of the frame and show the column and grid reference scheme :



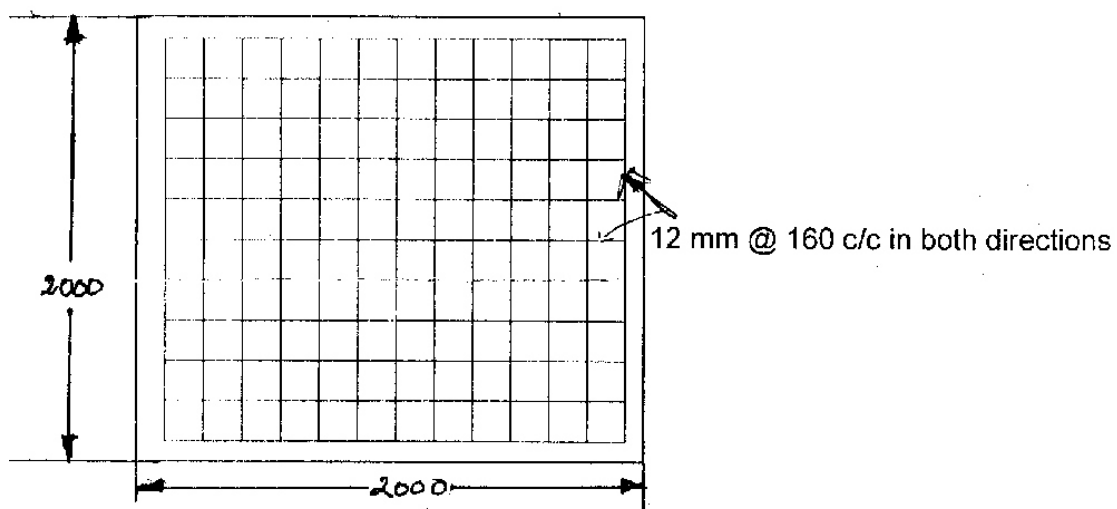
3. Prepare bar bending schedule and calculate quantity of steel for the lintel beam with the following specifications :

Clear span : 2000 mm, bearing on each side : 200 mm, size of beam : 230 wide \times 200 depth, all covers : 25 mm, main bars in tension zone 2-#12 mm, hanger bars : 2-#8 mm, stirrups : #8 mm two-legged stirrups @ 200 mm c/c throughout, weight of #12 mm = 0.89 kg/m, #8 mm = 0.39 kg/m.

4. A singly reinforced rectangular beam of size 230 mm \times 400 mm is provided with 3 #16 mm at bottom and 2#12 mm at top with 25 mm covers. Shear stirrups of 2 legged #8 mm are provided @ 200 c/c. Out of 3 bars at bottom one bar is cranked at the supports. Draw the section at end and mid span of the beam.

5. Calculate the quantity of steel to be provided in a square footing whose specifications are given below :

Size of the column : 400 mm \times 400 mm, size of footing 2000 mm \times 2000 mm, thickness of footing : 500 mm, reinforcement in footing #12 @ 160 c/c in both the directions with clear cover of 50 mm, weight of #12 = 0.89 kg/m.



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PART—B

20×2=40

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

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

(3) Assume suitable data, if necessary.

(4) Assume suitable scale.

6. Draw the following views of a continuous one-way slab whose specifications are given below :

(a) Plan showing the reinforcement. 10

(b) Longitudinal section of the T-beam. 10

Specifications :

(i) Clear span (shorter) : 3 m

(ii) Clear span (longer) : 6.5 m

(iii) Overall depth of the slab : 110 mm

(iv) Depth of web of T-beam (from the bottom of the slab) : 340 mm, width of T-beam : 230 mm

(v) Slab reinforcement :

Main steel along the mid span and continuous direction :
#10 @ 130 mm c/c

Along longer span : #10 @ 180 c/c, as distributors.

Distribution steel at the top to support bent up bars : #8 @
200 mm c/c

(vi) Beam reinforcement :

Bars in tension : 3#16, out of which 1 bar is cranked at a
distance of 930 mm from the face of the support.

Hanger bars : 2#12.

Stirrups : #8, two-legged stirrups at 200 mm c/c. Bed
block size : 230 mm × 230 mm × 150 mm.

(vii) All covers for slab reinforcement : 20 mm.

All covers for beam reinforcement : 40 mm

(viii) Width of wall around 230 mm

(ix) Number of bays three.

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7. Draw the reinforcement details of a simply supported two-way slab whose corners are free to lift with the given specifications :

(a) Bottom plan of the reinforcement. 10

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

Specifications :

(i) Size of the room : 4 m × 5 m

(ii) Overall depth of slab : 140 mm

(iii) Bearing on walls : 230 mm

(iv) Reinforcement :

Steel for shorter span : #12 @ 200 c/c (alternate bars cranked at a distance of 400 mm from the face of the support)

Steel for longer span : #10 @ 250 c/c (alternate bars cranked at a distance of 500 mm from the face of the support)

(v) All covers : 20 mm

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