



c09-c-607

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BOARD DIPLOMA EXAMINATION, (C-09)

MARCH/APRIL—2016

DCE—SIXTH SEMESTER EXAMINATION

STRUCTURAL ENGINEERING DRAWING

Time : 3 hours]

[Total Marks : 60

PART—A

4×5=20

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

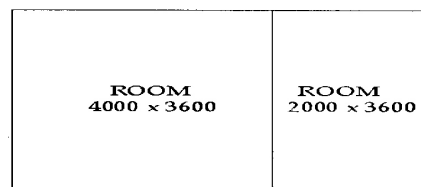
(2) Each question carries **four** marks.

(3) Part—A may be drawn not to scale.

(4) Assume suitable data, if necessary.

(5) For all main reinforcement, use HYSD bars.

1. Write any two points where columns and beams are placed in a framed structure with sketch.
2. Mark the position of columns in the given diagram and name them as per 'Grid Reference Scheme' :



3. Draw the cross section of an isolated column footing showing reinforcement details of column and footing with the following specifications :

Column :

Size of column—300 mm × 300 mm

Reinforcement—4 nos of 16 mm dia. with lateral

ties 6 mm dia @ 220 mm c/c

Footing :

Size of footing—1200 mm × 1200 mm

Reinforcement—10 mm dia. bars @ 100 mm c/c both ways

Depth—220 mm uniform

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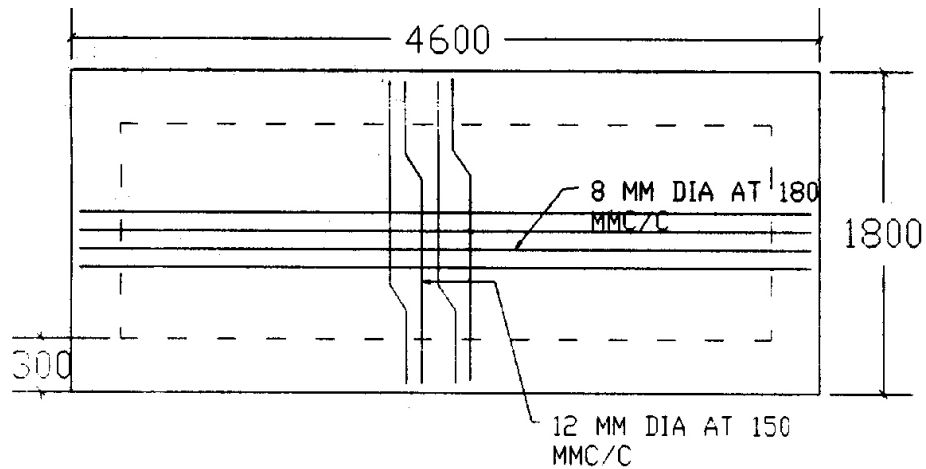
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4. Prepare a bar bending schedule for the one-way slab shown below :



Thickness of slab = 100 mm

All the covers = 20 mm

5. Prepare a bar bending schedule for the simply supported RC beam, with the following data :

Clear span—3200 mm

Size of the beam—230 mm × 350 mm

Wall thickness—230 mm

Main reinforcement—4 nos. of 12 mm dia. (all straight bars)

Hanger bars—2 nos. of 10 mm dia.

Stirrups—6 mm dia. 2-legged bars at 200 mm c/c

All covers are of 25 mm

PART—B

20×2=40

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

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

(3) Draw all questions to scale.

(4) Assume suitable missing data.

6. A two-way slab whose corners are not held down is laid over a room of size 3.0 m × 5.0 m :

Specifications :

Width of wall—230 mm

Bearing on walls—230 mm

Overall depth of slab—150 mm

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Main reinforcement :

Along short span—12 mm dia. @ 120 mm c/c (alternate bars are cranked at a distance of 300 mm from face of the support)

Along long span—10 mm dia. @ 150 mm c/c (alternate bars are cranked at a distance of 500 mm from face of the support)

Draw to a scale of 1 : 50 :

(a) Bottom plan of reinforcement 15

(b) Cross section along long span 5

7. Draw the longitudinal section and plan of staircase spanning longitudinally with the following specifications :

Size of the staircase room—4700 mm × 2000 mm (inside)

Level difference between floors—3000 mm

Width of the stair—1000 mm

Landing length—1000 mm

Tread—270 mm and Rise—150 mm

Thickness of waist slab—150 mm

Bearing on wall—230 mm (full)

Size of projection into basement—300 mm × 300 mm

Reinforcement details :

(i) Main reinforcement—12 mm dia at 120 mm c/c

(ii) Distribution steel—10 mm dia at 150 mm c/c

(iii) Additional bars—12 mm bars at 120 mm c/c
(at junction of landing slab with waist slab)

Bottom and end clear covers to steel—25 mm

Draw the following to a scale of 1 : 25 :

(a) Longitudinal section one flight 15

(b) Plan of the staircase room 5

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