**3728**

**BOARD DIPLOMA EXAMINATION, (C–09)**

**MARCH/APRIL—2017**

**DCE—SIXTH SEMESTER EXAMINATION**

STRUCTURAL ENGINEERING DRAWING

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

**PART—A**　　　　　　　　　　4×5=20

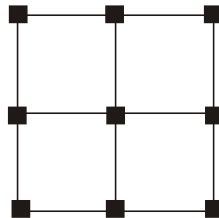*Instructions* : (1) Answer **all** questions.

(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.** Draw the line sketch of a two bedroomed building and show the position of columns in it.

**2.** Name the columns in the given diagram with 'grid reference scheme'.



**3.** Draw the cross-section parallel to short span of a one way slab with the following specifications :

Size of room—4500 mm × 2000 mm (inside)

Wall thickness—230 mm

Slab thickness—125 mm

Main reinforcement—10 mm dia bars at 120 mm c/c. All the bars are cranked on one side (at a distance of 250 mm from the face of the support) and cranks placed alternately

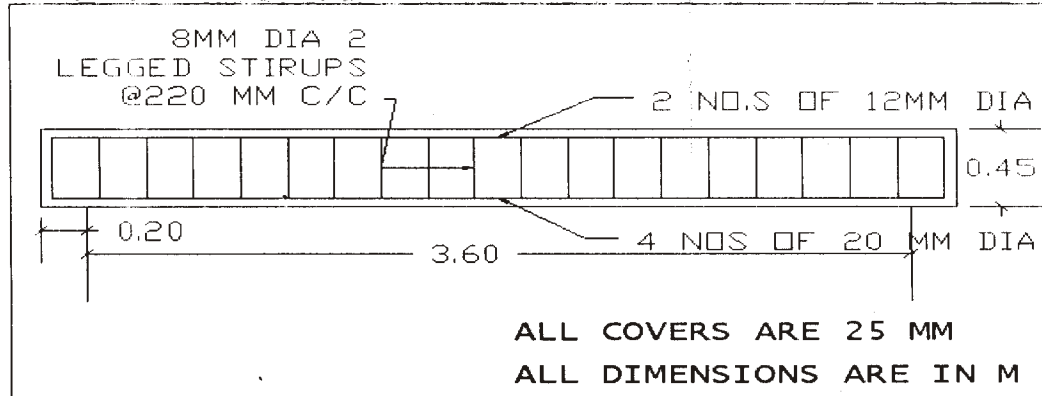Distribution reinforcement—8 mm dia bars at 150 mm c/c.

All covers are of 25 mm.

**4.** Prepare bar bending schedule for the simply supported RCC beam shown below :

Width of beam = 0·23 m



wt g 12 mm     0 89 kg / m

wt g 20 mm     2 47 kg / m

wt g 8 mm     0 39 kg / m

**5.** Draw the details of reinforcement at the junction of column and beam of a frame designed as earthquake resistant structure.

<div align="center">

**PART—B**        20×2=40

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

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

               (3) Draw all questions to scale.

               (4) Any missing data may be assumed suitably

**6.** An RCC Lintel with sunshade has the following specifications :

Clear span of Lintel—1·50 m

Width of wall—230 mm

Size of Lintel—230 mm × 200 mm

Bearing on walls—150 mm

Projection of sunshade from face of the wall—600 mm

Thickness of sunshade—80 mm at fixed end. 60 mm at free end

**Reinforcement of Lintel**

Main reinforcement—4 Nos. of 12 mm dia (middle to bars cranked at 45° at 220 mm from face of the support)

Hanger bars—2 Nos. of 10 mm dia

Stirrups—6 mm dia 2 legged at 180 mm c/c throughout

**Reinforcement of sunshade** :

Main bars—10 mm dia bars at 150 mm c/c

Distribution steel—8 mm dia @ 180 mm c/c

Draw to a scale of 1 : 10 the

*(a)* longitudinal section of Lintel;

*(b)* cross-section of Lintel with sunshade @ mid span.     10+10

7. A two way slab whose corners are held down is laid over a room of size 4·2 m × 6·0 m.

**Specifications** :

Width of wall—230 mm

Bearing on walls—230 mm

Overall depth of slab—160 mm

**Main reinforcement** :

Along short span—in middle strip–12 mm dia @ 150 mm c/c in edge strip–12 mm dia at 300 mm c/c

(Alternate bars are cranked at a distance of 420 mm from face of the support)

Along long span—in middle strip–12 mm dia @ 180 mm c/c in edge strip–12 mm dia at 300 mm c/c

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

**Torsion Reinforcement** :

In the form of mesh 850 mm × 850 mm in four layers with 8 mm dia bars 10 Nos. in each layer at all four corners

All covers are of 25 mm

Draw to a scale of 1 : 50 the

*(c)* bottom plan of reinforcement;

*(d)* cross-section along short span.                     15+5

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