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BOARD DIPLOMA EXAMINATION, (C-16)

OCTOBER/NOVEMBER—2023

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) Part—A may be drawn **not** to scale.

(4) Assume suitable data, if necessary.

1.   State any four guiding principles for locating the column positions.

2.   Mark the position of columns in the given diagram and name those as per "column reference scheme".

ROOM 1 3·60 × 3·60 m	ROOM 1 3·30 × 3·60 m
ROOM 1 3·60 × 3·00 m	ROOM 1 3·30 × 3·00 m

3. Prepare a bar bending schedule and estimate the quantity of steel for the simply supported RC beam, with the following data :

Clear span	=	4000 mm
Size of the beam	=	230 × 360 mm
Wall thickness	=	230 mm
Main reinforcement	=	3 nos. of 16 mm dia. (all straight bars)
Hanger bars	=	2 nos. of 12 mm dia
Stirrups 8 mm dia. 2 legged bars @ 200 mm c/c		
Clear cover provided (all)	=	25 mm
Weight of #16	=	1·58 kg/m
Weight of #12	=	0·89 kg/m
Weight of #8	=	0·39 kg/m

4. Prepare a bar bending schedule for the one-way slab shown below and calculate the total quantity of steel.
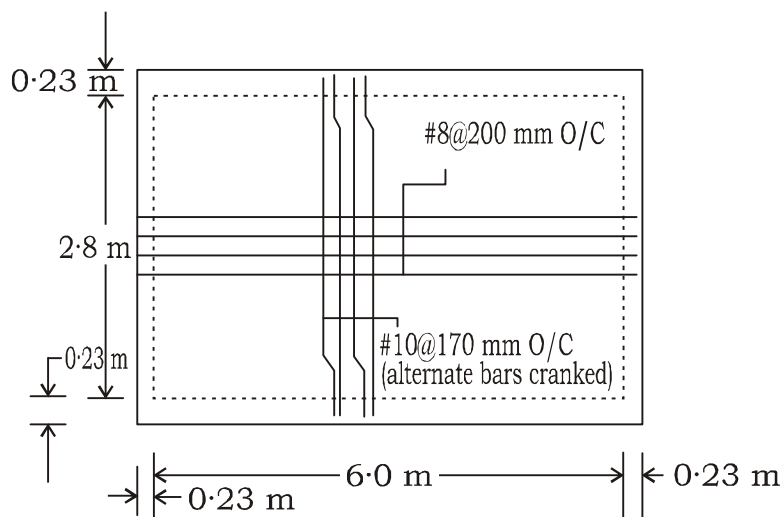
5. Show with the line diagrams with reference to short span and long span, the arrangement of end strips and middle strip as per IS : 456 – 2000.

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

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

(3) Draw all questions to scale.

(4) Assume suitable data, if necessary.

6. An RCC lintel with sunshade has the following specifications :

(a) **Lintel :**

Clear span of the lintel	=	1600 mm
Size of the lintel	=	230 mm wide × 230 mm depth
Bearing on either side	=	150 mm
Main bars in tension	=	4 nos. # 12

Two bars were cranked through 45° at 230 mm from each support

Hanger bars	=	2 nos. # 10
Stirrups	=	# 6, two legged @ 180 mm c/c

(b) **Sunshade :**

Projection of the sunshade	=	600 mm
Thickness at the fixed end	=	100 mm
Thickness at the free end	=	60 mm
Main bars	=	# 10 @ 150 mm c/c
Distribution bars	=	# 6 @ 150 mm c/c

(c) **Covers :**

Bottom clear cover in lintel	=	30 mm
Top clear cover in sunshade	=	20 mm
All remaining covers	=	25 mm

Draw the following views to a scale of 1 : 10 –

(a) Longitudinal section of lintel 10

(b) Cross-section of lintel with sunshade at mid span 10

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

Specifications :

Size of the staircase room	=	4700 × 2500 mm
Height of the floor	=	3300 mm
Tread (T)	=	270 mm
Rise (R)	=	150 mm
Thickness of waist slab	=	175 mm
Bearing on walls	=	230 mm
Projection into the basement	=	300 × 300mm

Reinforcement detailing :

(a) Main reinforcement = 12 mm dia. At 100 mm c/c (Alternate bars are cranked at 'L/7' from the bottom end)

(b) Distribution steel = 8 mm dia. at 150 mm c/c

(c) Additional bars = 12 mm bars at 140 mm c/c (at junction of landing slab with waist slab)

Bottom and end clear cover to steel = 25 mm

Draw to scale of 1 : 25.

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