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C09-C-607

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**BOARD DIPLOMA EXAMINATION, (C-09)
OCTOBER/NOVEMBER-2018
DCE - SIXTH SEMESTER EXAMINATION**

STRUCTURAL ENGINEERING DRAWING

Time : 3 Hours]

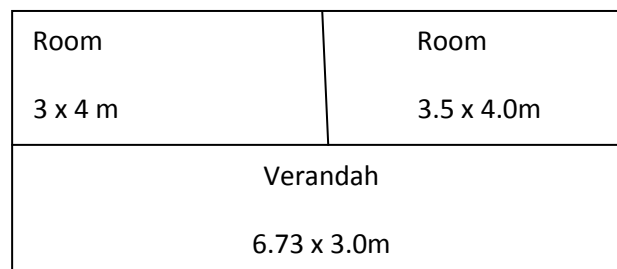
[Total Marks: 60

PART-A

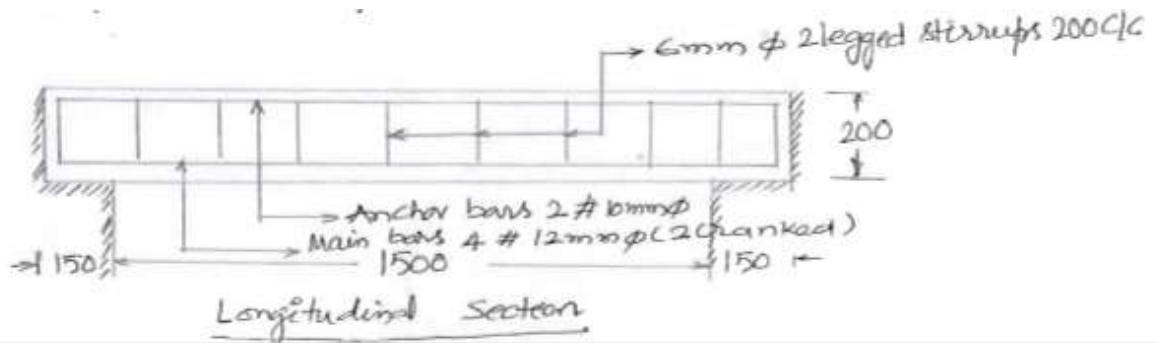
5X4=20

- Instructions :**
1. Answer **All** questions.
 2. Each question carries **FOUR** marks.
 3. Answer should be brief and straight to the point and shall not exceed five simple sentences.

1. Distinguish column reference scheme and grid reference scheme.
2. Draw the layout plan indicating the position of beams and columns with orientation for the line diagram shown below. Adopt grid reference scheme:



3. Prepare the bar bending schedule and find the quantity of steel required for the main reinforcement for the lintel shown below. Top and bottom covers are 25mm and side cover is 40mm



4. From the given specifications of a one way slab, show the details of reinforcement (cross-section along shorter span)

Room measurement (internal) = 4 x 9m

Main reinforcement = 12mm @ 180mm c/c with alternate bars cranked at 400mm from the support

Distribution steel = 8mm ϕ @ 200mm c/c

Hanger bars = 8mm ϕ , 3 no's on each end

Thickness of wall = 300mm

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

PART-B

20X2=40

- Instructions :**
1. Answer **all** questions
 2. Each question carries **twenty** marks.

6. The following are reinforcement details/specifications of a simply supported singly reinforced rectangular beam.

a) **Specifications:** Clear span of the beam = 3500 mm

Bearing on either side = 200mm

Width of beam = 300mm

Overall depth of beam = 450mm

b) **Materials :** concrete = M20 grade

Steel = fe-415

- c) **Reinforcement** : bars in tension 5#20, out of which 2 bars are cranked at 45° at a distance of 400mm from the face of the support.

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Hanger bars: 2#12

Stirrups: #8, two legged stirrups at 250mm c/c

- d) **Covers**: Bottom clear cover: 40mm

Top clear covers: 40mm

Side clear covers: 40mm

- (a) Draw the following views to a suitable scale:

- i. Longitudinal section showing reinforcement details
- ii. Cross-section @ middle showing reinforcement details.
- iii. Cross-section @ end showing reinforcement details

- (b) Prepare the schedule of reinforcement and estimate quantity of steel.

7. Draw the longitudinal cross-section of an isolated square column footing for a column with the following specifications:

Size of column : 300 x 300mm

Size of footing: 1800 x 1800mm

Thickness of footing: 400mm

Base coarse thickness: 150mm with P.C.C. (1:2:4)

Reinforcement for footing: 12mm dia at 180mm C/ in both the directions. The

horizontal lap length of the column reinforcing bar is 400mm
each

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Reinforcement for column : main bars: 16mm dia bars, 4 no's

Lateral ties: 8mm dia ties @ 200mm c/c

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