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C-14-C-607

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**BOARD DIPLOMA EXAMINATION, (C-14)
OCTOBER/NOVEMBER-2018
DCE– SIXTH SEMESTER EXAMINATION**

STRUCTURAL ENGINEERING DRAWING

Time : 3 Hours]

[Total Marks: 60

PART-A

4X5=20

- Instructions :**
1. Answer **All** questions.
 2. Each question carries **four** marks.
 3. Need not drawn to a scale.
 4. Assume suitable data if necessary

1. State four important points to be considered in positioning and orientation of columns.
2. Draw the longitudinal section of the T-beam with the following specifications:

Clear span of T-beam	:	6000mm
Bearing on walls	:	230mm (Full bearing)
Thickness of roof slab	:	120mm
Overall depth of T-beam	:	400mm
(Including slab thickness)		
Width of T-beam	:	230mm

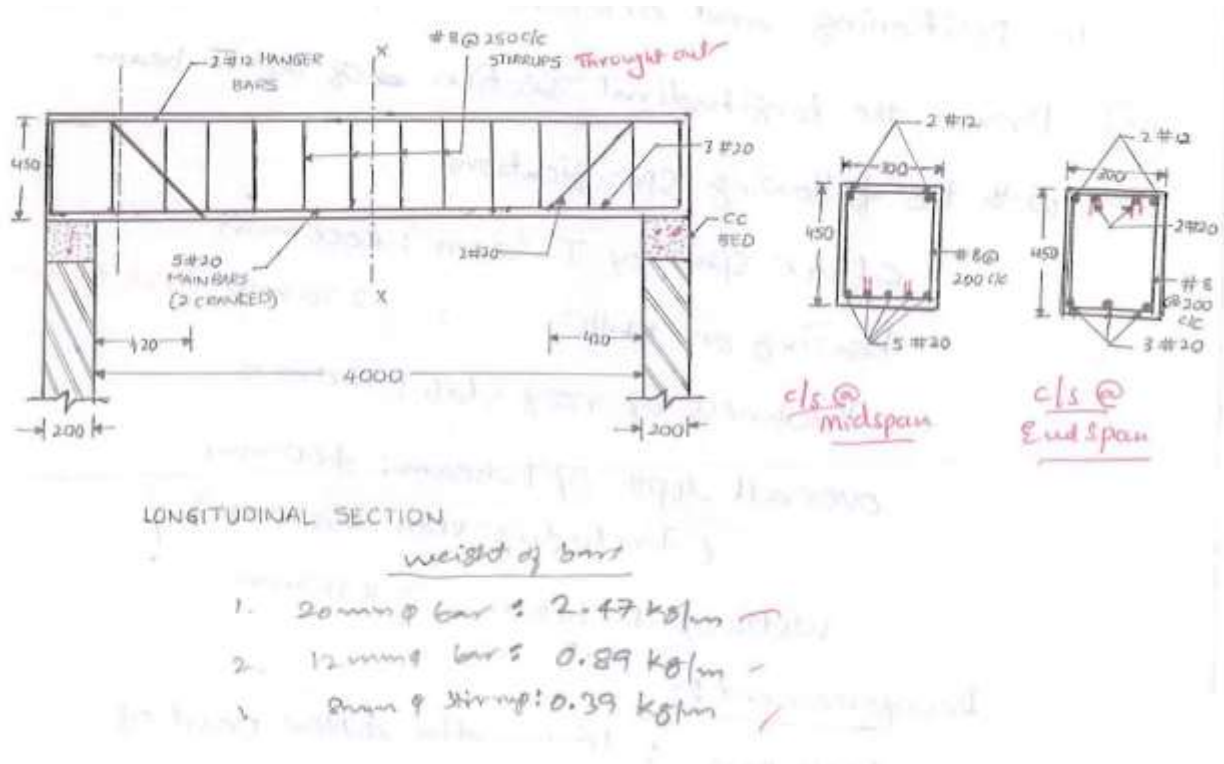
Reinforcement:

Main bars	:	16mm dia 3 Nos (out of which 1 bar is cranked at a distance of 850mm from the face of the support)
Hanger bars	:	12mm dia, 2 No's
Stirrups	:	8mm dia, 2 legged stirrups at 200mm C/C throughout

Covers:-

* All covers to beam reinforcement = 40mm

3. Draw the details of reinforcement at the junction of column and beam of a frame designed as earthquake resistance structure
4. Prepare the bar bending schedule and find the quantity of steel required for the main reinforcement for the simply supported beam shown in the figures below. Take top and bottom covers ad 25mm and side covers as 40mm.



5. Draw the side elevation of a built up column with batten system, showing the bottom tie plate and battens (intermediate) upto a minimum of two No's. from the following specifications:

Specifications:

Overall height of the column is 5000mm consists of 2 No's ISMC 250@30.4Kg/m placed back to back keeping a clear distance of 180mm between webs.

The sizes of end battens are 220mm deep x 10mm thick and intermediate battens are 180mm deep x 10mm thick.

The spacing between the consecutive battens is 700mm. 6mm fillet weld of 50mm lap length and over the entire depth of batten on end face is provided as batten connection with the main component.

PART-B

2X20=40

- Instructions :**
1. Answer **all** questions.
 2. Each question carries **20** marks.
 3. Draw all the questions to the given scale:

6. Draw the requirement details of a simply supported R.C.C one way slab with the following specifications:

Specifications:

1. **Size of the room:** 2800mm x 6000mm
2. **Overall depth of slab:** 140mm
3. **Bearing on walls:** **230mm** (full bearing)
4. **Edge conditions:** simply supported
5. **(i) Main reinforcement:** 12mm dia at 180 mm c/c (alternate bars are cranked at a distance of 400mm from the face of support)
(ii) Distribution reinforcement: 10mm dia at 220mm c/c
(iii) Provide 3 No's of 8mm dia hanger bars at each edge to keep top bars in position.
6. **Covers:** -
 - i. Top and bottom clear cover: 20mm
 - ii. Side clear cover : 25mm
7. **Materials:**
 - i. Concrete : M-20 grade.
 - ii. Steel : Fe-415

Draw the following views to a scale of 1:20

- a) Bottom plan of the reinforcement.
- b) Cross section along the shorter span at mid span

c) Cross section along the longer span at mid span

7. From the following specifications of steel built up beam, draw the following:

- (a) Longitudinal elevation of built up beam
- (b) Cross section of the beam at the mid span
- (c) Plan at top.

Specifications:

1. Span between the supports; 12,000mm
2. Width of masonry wall support : 300mm
3. Built up beam consists of one ISMB 600@ 122.6 kg/m provided with two flange plates of size 280mm x 12mm, both on top and bottom flanges ($b=210$, $t_f = 20.8$ and $t_w = 12$ mm)
4. Outermost flange plates are curtailed at the distance of 900mm from the face of the support.
5. The flange plates are connected to the R.S.J. by fillet weld of size 6mm, 125mm length at spacing of 150mm
6. At the point of curtailment of the upper flange plate be fillet welded of 6mm over the entire width.
7. Suitable bearing plates at the ends are provided.

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