

Seat  
No.

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CAI1326

## Structural Design & Drawing - II (New) (1060)

P. Pages : 2

Time : Four Hours

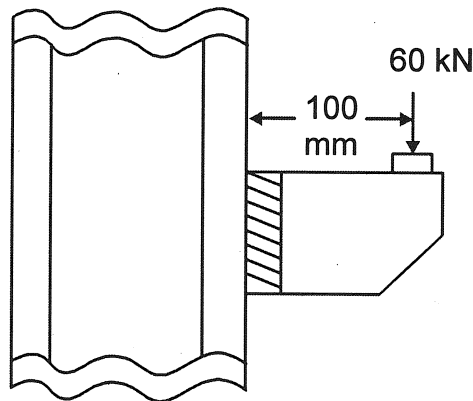
Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any one** question from each unit.
5. Use IS 800 & steel table is permitted.
6. Use of non programmable calculator is allowed.

### UNIT - I

1. a) Explain the different modes of failure of rivetted joint. Draw its different sketches. 10  
b) Design a butt weld to connect a 10mm thick plate bracket to the fig. of a column joist. A load of 60 kN is placed on the bracket at an eccentricity of 100 mm. 15



2. a) Design the tension member for an axial load of 300 kN. The member consists of two angles on both sides of 10mm gusset plate  $L = 5.5\text{m}$ . 15  
b) What is tension member. Explain the different forms of sections used as tension member. 10

## UNIT - II

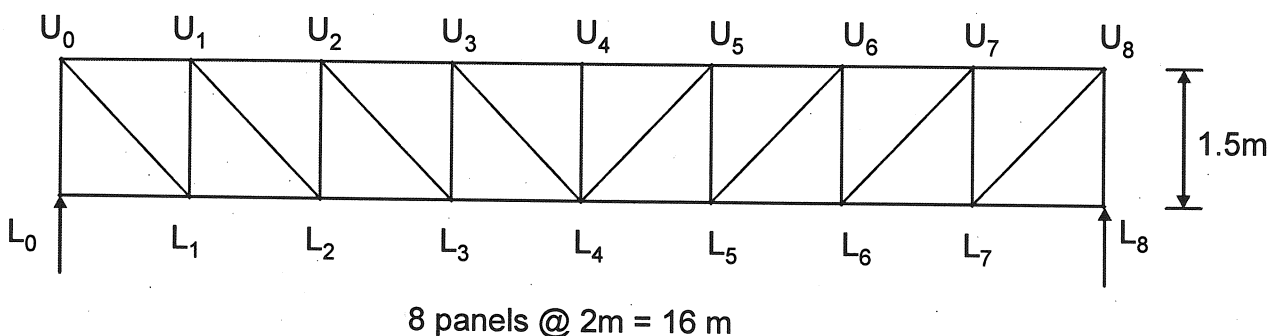
3. Design a column of eff. length 5.9 m it is subjected to an axial load of 1400 kN. Provide two channels back to back connected with battens by welded connection. 25
4. Write a short note on : 25
- Purlins.
  - Selection of type of truss.
  - Spacing of truss.
  - Loads on roof truss.
  - Analytical design of roof truss.

## UNIT - III

5. Design a welded plate girder 24m in effective span and simply supported at ends. It carries a uniformly distributed load of 100 kN/m. 25
6. Design a beam of 6m effective span carrying a load of 25 kN/m. The compression flange is laterally unsupported ( $f_y = 250$  MPa). 25

## UNIT - IV

7. The foot over bridge shown in fig has following data 25
- effective span = 16 m  
 panel width = 2m  
 Ht of truss = 1.5m  
 Clear walkway = 2.5m  
 Live load on bridge =  $5\text{ kN/m}^2$   
 floor finish =  $1.5\text{ kN/m}^2$ .  
 Design member,  $U_1$ ,  $U_2$ ,  $L_1$ ,  $L_2$ ,  $U_2$ ,  $L_2$  &  $U_1 L_2$



8. A column section 1.5.H.B. 350@ 674 N/m carries an axial load of 1100 kN. Design a suitable gusset base. Allowable bearing pressure on concrete is  $4000\text{ kN/m}^2$ . 25

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