

SECTION-B

- Q2. Design a bracket connection to transfer an end reaction of 225 kN due to factored loads as shown in figure 1. The end reaction from the girder acts at an eccentricity of 300 mm from the face of the column flange. Design bolted joint connecting the Tee-flange with the column flange. Steel is of grade Fe 410 and bolts of grade 4.6.

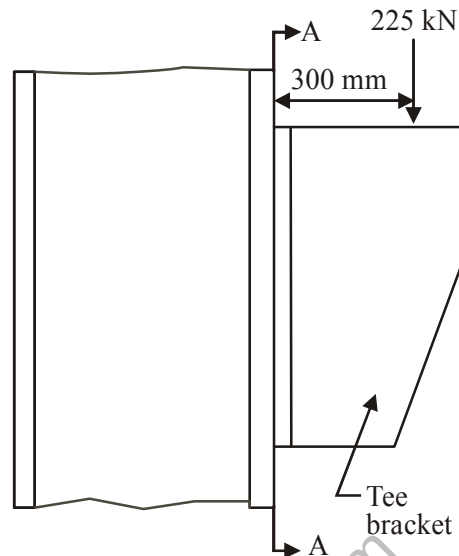


Figure 1

- Q3. Differentiate between Deck type and through type truss bridges. Show various parts of truss bridge with the help of a diagram.
- Q4. Determine the flexural design strength of plate girder having simply supported connection and continuous lateral support. Flange: 650×50 mm, web: 2000×12 mm, span 16 m and only flanges resist bending moment.
- Q5. Write short note on .
- (a) Portal Sway Bracing
 - (b) Cross Girders and main girders with welded joints.
- Q6. Derive the expression for the economical depth of a plate girder. Assume moment is resisted by flanges only.

SECTION-C

- Q7. Design a simply supported gantry girder to be used in an industrial building carrying an electric overhead travelling crane for the following data :

Crane capacity: 200 kN

Self weight of crane girder excluding trolley : 200 kN

Self Weight of trolley, electric motor, hook etc. : 40 kN

Minimum approach of crane hook: 1.2 m

Distance between c/c of wheels: 3.5m

Distance between c/c of gantries: 16.0 m

Span of gantry girder: 8.0 m

Self Weight of rails: 300 N/m

Diameter of crane wheels: 150 mm

Grade of steel: Fe 410

- Q8. A plate girder with Fe 410 steel plates is having 12mm $\times$ 1800 mm web plates and 75 mm $\times$ 550 mm flange plates. Determine the design flexural strength, if unrestrained length is 10 m.

- Q9. Design foot bridge for following data:

Type of girder : lattice type.

Span of girder = 15 m C/C of bearings.

Cross girders to be spaced at 1.8 m centres.

Clear walking width between main girders = 2m.

Pedestrian load = 4 kN/m².

Flooring of timber planks supported on cross girders.

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