

6. Design a fan type steel roof truss to suit the following data :—

Span of truss - 15 m,

Spacing of truss - 4.5 m,

Roof cover - GC sheet at - 0.3 kN/m^2

Wind pressure - 1.5 kN/m^2 ,

Pitch of roof - $\frac{1}{4}$.

7. Differentiate plate girders and gantry girders.

A riveted plate girder is simply supported over an effective span of 20 m and it carries a uniformly distributed load of 80 kN/m, in addition to its self weight. Design the plate girder assuming that it is effectively supported in lateral direction. Sketch the details of the longitudinal section and cross-section of the girder. Assume $f_y = 250 \text{ N/mm}^2$.

Or

8. Explain the design of gantry girder to carry an electrically operated crane with relevant data and diagrams.
9. The effective span of a through type plate girder two lane bridges is 50 m. The reinforced concrete slab is 300 mm thick inclusive of the wearing coat. The cross girders are provided at 2.5 c/c. The stringers are spaced at 2.25 m c/c. The spacing between main girders is 8 m. Determine the maximum sections for the stringers and the cross girders if the bridge is to carry IRC class A loading and sketch it.

Or

10. Explain the design of highway and railway bridges of plate girder type. Explain the significant difference.

(5 × 20 = 100 marks)

