



Question 1

A.) A car shed is to be constructed over a rectangular area 10.0m x 25.0m, the main system is made up of a double cantilever steel trusses. Steel columns are provided along long line EF only, clear height 6.0 m, it is required to draw a complete general layout. As shown in Fig. 1

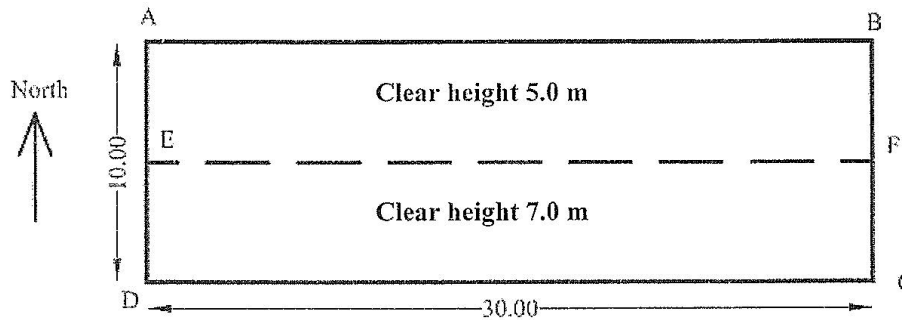


Fig.(1)

It is required to: i) Draw a general layout.; ii) Calculate the dead , live and right wind loads.; iii) Calculate the design force in the member B due to dead and live loads only.

Question 2

A.) For the roof truss shown in Fig. (2), calculate the buckling lengths for members A, B, C, D and E

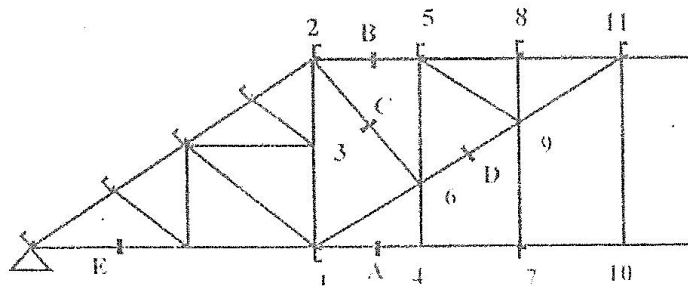


Fig.(2)

B.) The following table shows design force for a separate truss members, design the members as rolled steel sections taken into consideration that all the members are connected to the gusset plates thickness 10 mm with ordinary bolts M16 mm

Member	F_D (t)	Length L (m)	L_{bx} (m)	L_{by} (m)	Notes
1	-18.0	1.50	1.50	3.0	Top chord
2	25.0	3.00	3.00	3.00	Bottom chord
3	-15	2.0	3.00	4.00	Diagonal

Question 3

- A.) Design the bolted connection A and B shown in Fig. (3) if the connection with non-pretensioned bolts M16 grade 4.6 and gusset plate thickness is 10 mm. Draw its detail to scale 1:10.
- B.) For connection shown in Fig. (4); determine the maximum shear stress in the critical bolt, and select a suitable diameter to resist it if the bolt is made from grade 5.6

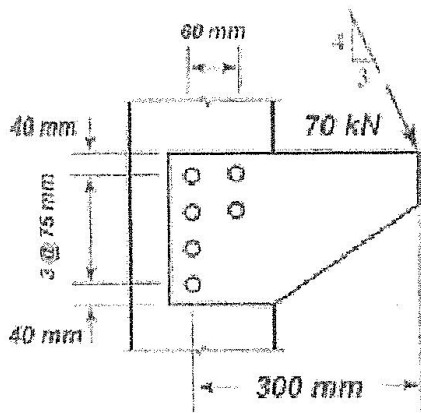


Fig.(4)

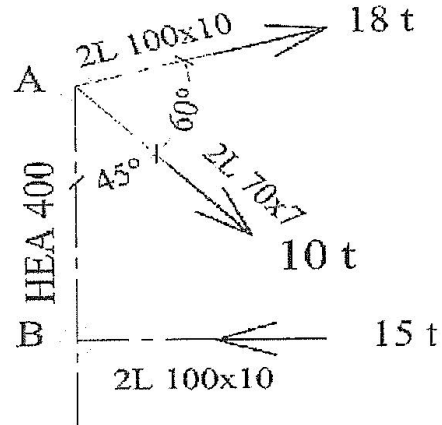


Fig.(3)

Question 4

- A.) For a system of truss with spacing 7.0 m and panel length = 2.25 m. It is required to design an intermediate purlin using hot rolled section. Where the roof is flexible and inaccessible with slope 1:20.
- B.) Design the welded connection shown in Fig. (5) gusset plate thickness is 10 mm. Draw its detail to scale 1:10

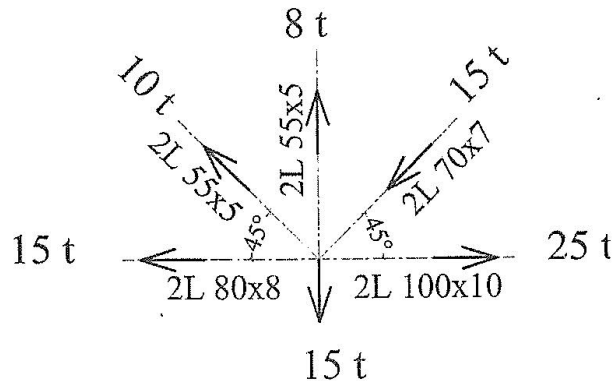


Fig.(5)