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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**

(AUTONOMOUS)

**B.Tech III Year II Semester Regular Examinations May 2019****DESIGN & DRAWING OF STEEL STRUCTURES**

(Civil Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A****(Answer any one) (1 x 24 = 24M)**

1. Design a laced column with two channels back to back to carry an axial factored load of 1400 kN. The effective length of column is 10m. The column may be assumed to have restrained in position but not in direction at both ends. Draw the (i) cross section at mid height and (ii) Front view along the height of the column
2. A simply supported beam of 10m effective span is carrying a total factored load of 60 kN/m. The depth of beam should not exceed 500mm. The compression flange of the beam is laterally supported by floor construction. Assume a stiff end bearing of 75mm.

**PART-B****(Answer any Three) (3 x 12 = 36M)**

3. A tie member consisting of an ISA 80mm x 50mm x 8mm is welded to a 12mm thick gusset plate at site. Design welds to transmit load equal to the design strength of the member.
4. Design a slab base for a column ISHB 300 @ 577 N/m carrying an axial factored load of 1000kN. M20 Concrete is used for the foundation. Provide welded connection between column and base plate
5. Design a simply supported beam of span 6m carrying a UDL of 20 kN/m including self-weight. If the compression flange of the beam is laterally supported (or) restrained. Check the beam for moment carrying shear and deflection. The grade of steel is Fe 410.
6. Determine the design loads on the purlins of an industrial building near Visakhapatnam, given  
Class of building: General with life of 50 years ;  
Terrain : Category 2 ;  
Maximum dimension; 40m ;  
Width of building: 15m ;  
Height at eve level : 8m ;  
Topography :  $\theta$  less than 30 ;  
Permeability : Medium ;  
Span of truss : 15m ;  
Pitch : 1/5 and Sheeting is A.C.sheets ;  
Spacing of purlins and trusses are 1.35m & 4m respectively.
7. A roof truss shed is to be built in Agra for an industry. The size of shed is 24m x 48m. The height of building is 12m at the eaves. Determine the basic wind pressure.

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