R16

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year II Semester Regular & Supplementary Examinations October-2020
DESIGN & DRAWING OF STEEL STRUCTURES
(Civil Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer Any One)   1*24=24M

1 Design a built up column of length 10 m carrying an axial factored load of 1400 KN. The column may be restrained in position but not in direction at both ends. Design battens instead of lacing system.   **24M**

OR

2 A tension member carrying a factored tensile load of 180 KN has to convert through a gusset plate of 10 mm thick using 16 mm diameter of ordinary bolt of grade 4.6. The available length of the gusset plate for making connection is 250 mm. Design the member and its connection also design the lug angle if required.   **24M**

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

3 **a** A 20mm thick plate is joined to 18mm plate by 200 mm long (effective) butt weld. Determine the strength of joint if a Single V butt weld is used.   **6M**

   b Explain Lap and Butt joints of rivet.   **6M**

4 Determine the tensile Strength of a roof truss member 2ISA 9060,6 mm connected to the gusset plate of 8mm thickness by 4 mm weld as shown in figure below. The effective length of weld is 200mm.

12M
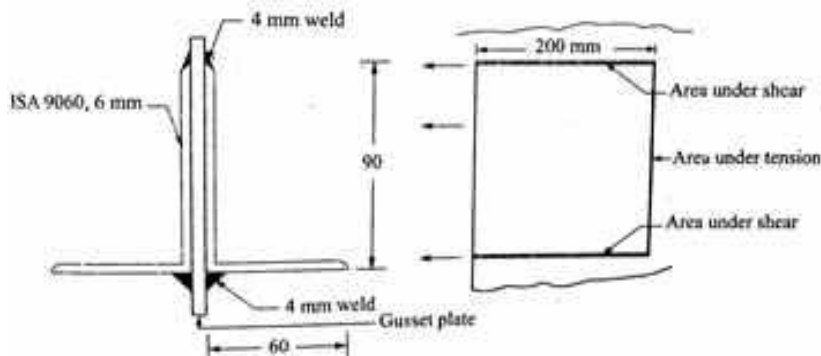
5 Design a single angle strut connected to the gusset plate to carry 180 KN factored load. The length of the strut between center to center connections is 3m.   **12M**

6 Design a simply supported I-section to support the slab of hall 6m X 12m with beam spaced at 3m centre to centre. Thickness of slab is 125mm. Consider floor finish load 0.5 KN/m^2 and live load of 5 KN/m^2. The grade of steel is E250. Assume that adequate lateral support is provided to compression flange.   **12M**

7 A power plant structures having maximum dimension more than 60 m is proposed to be built on downhill side near Dehradun. The height of the hill is 400 m with a slope of 1 in 3. If the location is 250 m from the crest of the hill on downward slope, and its eve board is at a height of 9 m, determine the design wind pressure.   **12M**

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