

Roll No. 158230056

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**B.E. VIth Semester (CGPA)
Examination, 2017**

EF-338

CIVIL ENGG.

[Structural Design and Drawing-II (Steel)]

Paper : CE-603 S.P.

Time : 3 Hours]

[Maximum Marks : 60

Note :- Attempt all questions. All questions carry equal marks.

1. (a) Explain various loads acting on a structure.
- (b) A tie member consist of two ISMC 250. The channel are connected on either side of a 12 mm thick gusset plate. Design the welded joint to develop the full strength of tie. However the overlap is to be limited to 400 mm.

SS-338

(1)

Turn Over

Or

UITians

- (a) Difference between LSM and WSM.
 - (b) Design a lap joint between the two plates each of width 120 mm, if the thickness of one plate is 16 mm and the other is 12 mm the joint has to transfer a design load of 160 kN. The plate are of Fe 415 grade. Use bearing type bolts.
2. Design a double angle tension member connected on each side of 10 mm thick gusset plate to carry an axial factored load of 375 kN. Use 20 mm black bolts. Assume shop connection. S.P.

Or

Design a single angle strut connected to the gusset plate to carry 180 kN factored load. The length of the strut between centre to centre connection is 3 m.

3. Design a simply supported beam of effective span 1.5 m carrying a factored concentrated load of 360 kN at mid span.

Or

UITians

Design angle of purlin for the following data :

Spacing of truss = 4 m

Spacing of purlins = 1.6 m

live load = 0.6 kN/m²

w.t. of AC sheets including laps and fixtures
= 0.205 kN/m²

wind load = 1 kN/m²

Inclination of main rafter of truss = 21°

4. Design a slab base for a column ISHB 300 @ 577 N/m carrying an axial factored load of 1000 kN. M20 concrete is used for the foundation. Provide suitable connection between column and base plate.

Or

Design a laced column with two channel back to back of length 10 m to carry an axial load factored load 1400 kN. The column may be assumed to have restrained in position but not in direction at both ends. (hinged ends).

5. Write short notes on the following :

- (a) Bracing for high rise structure
- (b) Transmission Tower
- (c) Design loads on high rise building
- (d) Steel structure

S.P.

Or

- (a) Explain various types of bracing used in high rise structure.
- (b) Write down the design steps of transmission tower.