

(b) Design a 4m long column (light gauge steel) to carry a load of 160 KN. Take $f_y = 235 \text{ N/mm}^2$. Use two channels.

9. (a) Sketch different types of light gauge sections. 20

(b) Two channels of $180 \times 180 \text{ mm}$ section with bend lips are connected with webs to act as beam. Thickness of the plate is 2.5 mm & the depth of the lip = 25 mm . The beam has an effective span of 4.1 . Determine the allowable load per meter run on the beam. Take $f_y = 250 \text{ N/mm}^2$.

Roll No.

24511

B. Tech. 7th Semester (Civil Engg.)

Examination – December, 2016

DESIGN OF STEEL STRUCTURE - II

Paper : CE-401-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempts *five* questions in all, selecting at least *one* question from each Section. Question No. 1 is *compulsory*. All questions carry equal marks. Use of IS 800-1984, IS 800-2007, IS 801-1975 is allowed.

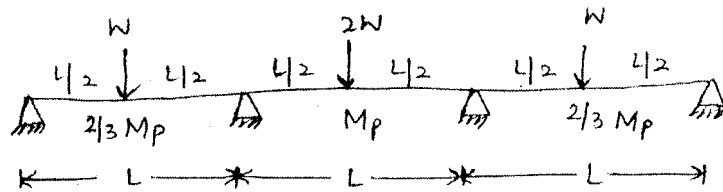
1. Explain the following : 20

- (a) Plastic Hinge.
- (b) Various loading on industrial building.
- (c) Failure modes of an Axial loaded column.
- (d) Column splice.

(e) Local buckling.

SECTION - A

2. Determine the collapse load for the continuous Beam
Section as shown in fig. 2 20



3. (a) Describe the mechanism of Plastic Analysis. 20
(b) Describe theorems of Plastic Collapse.

SECTION - B

4. (a) List the elements of industrial building. 20
(b) Symmetric trusses of span 30m and height 5m are spaced 4.5m c/c. Design the channel section purlins to be placed at suitable distances to resist the following loads.

Weight of sheeting including belts = 171 KN/m²

Line load = 0.4 KN/m²

Wind load = 1.2 KN/m²

Spacing of purlins = 1.4 m.

Design the purlin as per IS 800 : 2007

5. Design an elevated cylindrical steel tank with hemispherical bottom for 1,70,000 litres capacity. The tank has conical roof, the ring beam of the tank is at a height of 10m from the ground level, the tank is to be built at Delhi. Take $f_y = 250 \text{ N/mm}^2$. 20

SECTION - C

6. Design for Delhi a self supporting steel stack of height 72m above the foundation the diameter of the cylindrical part of the Chimney is 3m. The foundation has to rest on medium soil having bearing capacity of 200 KN/m². The thickness of fire brick work lining is 100mm, and the lining is supported by stack throughout the height. The chimney has one breech opening the topography at the site is almost flat, of the location is of terrain category 2. 20

7. (a) Explain various load on Transmission line tower.
(b) Describe condition of design of transmission line towers. 20

SECTION - D

8. (a) Define stiffened compression element and unstiffened compression element. 20