

Roll No.

24511

B. Tech 7th Semester (Civil Engg.)
Examination – May, 2018

DESIGN OF STEEL STRUCTURES - II

Paper : CE - 401 - F

Time : Three Hours]

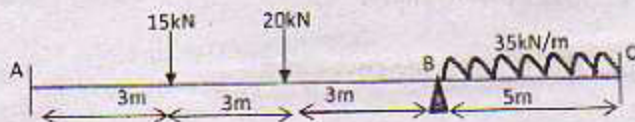
[Maximum Marks : 100

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 : Attempt five questions in all. Selecting at least one question from each Section.

SECTION – A

1. A two span continuous beam of uniform section loaded with ultimate loads as shown in fig. Determine the required plastic moment of resistance. 20



2. Explain the followings

(i) Shape factor.

(ii) Conditions for plastic analysis.

(iii) Plastic Collapse.

(iv) Principal of virtual work done

20

SECTION - B

3. Design the purlins for the following roof truss arrangement. 20

Span of roof = 20.50 m

Spacing of truss = 8 m c/c

Spacing of purlins along the slop of roof truss
= 1.29 m c/c

At ends and near ridge = 1.23 m c/c

4. Design a rectangular steel overhead tank to hold 100,000 liters of water. The height is 2.2 m and depth of water is 2 m. Steel plates are available in 2 m and 1.25 m widths and of any thickness. Design 20

(a) The bottom plate,

(b) The bottom tee cover and

(c) the tie bar.

SECTION - C

5. Design for Delhi a self-supporting steel stack of height 110m above the foundation. The diameter of the cylindrical part of the chimney is 4.75m. The foundation has to rest on soil having bearing capacity 180 kN/m^2 . The topography at the site is flat and location is of terrain category 2. Design any three sections along with foundation. 20
6. Define tower. What are the forces that act on the microwave towers ? Explain the analysis and design steps of microwave towers. 20

SECTION - D

7. Write down all types to cold formed sections with neat and clean diagrams in detail. Also write down the design steps for design of bending elements according to Indian standard. 20
8. Determine the effective section modulus of a $225 \times 75 \times 25 \times 6$ mm lipped channel section cold formed from galvanized steel sheet with 0.06mm thick coating. The yield strength and elastic modulus of the material of the channel section are 280 MPa and $2.05 \times 10^5 \text{ MPa}$, respectively. 20