Printed Pages: 5 | 301 | ECE-701

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID:100701 Roll No. | | | | | | | | | |

B.Tech.

(SEM. VII) THEORY EXAMINATION, 2015-16

DESIGN OF STEEL STRUCTURES

[Time:3 hours] [Total Marks:100]

Section-A

1. Attempt **all** parts. Write answer of each part in short. (2×10=20)

(a) (i) The most suitable section for the member subjected to torsional forces is.....

(ii) The guage length of the steel of equal to.....

(b) An electric pole of height 5.0 m is fixed at bottom. It carries a wire at top and free to move sideways. The effective length of pole is.....

(c) (i) The design wind speed for any site is $V_z = V_b$ $k_1 k_2 k_3$ the factor k_1 is.....

(ii) In a roof truss top chord members are also known as.....

(d) (i) The design wind speed is 10m/s. The desing wind pressure will be equal to.....

(ii) In fillet wleding, if the angle between the fusion face is 101° the value of 'k' is.....

(e) (i) Ultimate tensile strengh for Fe 410 is.....

(ii) Write the interaction equation for checking the bolts for combined shear and tension.

(f) Draw stress strain curve for mild steel.

(g) List assumptions made in design of bearing bolts.

(h) The yield strengh for mild steel specimen was found to be 250 N/mm^2. Taking factor of safety of 3, find out the working stress.

(i) What is a base plate and why is it required.

(j) Neatly sketch the following welded connections:

(i) Butt weld (single V, Double V)

(ii) Fillet weld.

Section-B

Note: Attempt **any five** questions from this section. (10×5=50)

2. Explain in brief various types of loads to be considered in the design of steel structure.

3. Determine the design axial load capacity of the column ISHB 300 @ 577 N/m if the length of column is 3m and its both ends are pinned.

4. A lap joint between two plates of size (250×16) mm and (250×10) mm thick is to transmit a factored load 220 kN. Calculate the number of M20, 4.6 grade bolts required to transmit the force. Use E250 grade for plates.

5. What are Plate Girders? Discuss thier utility as a flexual member.

6. Two plates 12mm and 20mm thick are to be connected by a double cover butt joint. Design the joint to transfer a factored load of 500 kN using M20 and /or MI6 4.6 grade bolts. Draw adequate scaled section and plan views with dimensioning.