Paper Code & Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | |

B.Tech. (VI - Sem.)

Even Semester Examination - 2016

DESIGN OF STEEL ELEMENTS

[Time : 3 Hours] *[Maximum Marks :100]*

Note: Attempt **All** Questions. Use of steel table IS 800 is allowed

Q 1. Attempt **any four** questions: (5x4=20)

(a) Explain the following terms:

(i) Lug Angles

(ii) Gusset Plate

(b) Write the steps for the design of tension members subjected to axial load?

(c) What is slenderness ratio?

(d) What do you mean by tension members? Explain its type?

(e) Describe splices as a tension member?

Q 2. Attempt **any four** questions: (5x4=20)

(a). Explain the following terms:

(i) Bracing

(ii) Ganetry girder

(b). What do you mean by stiffeners?

(c). What are the elements of plate girder?

(d). Explain the curtailment of flanges plates?

(e). Explain Beam-Column connections?

Q 3. Attempt **any four** questions: (5x4=20)

(a). What are the advantages of steel as a structural member?

(b). Write the properties of steel?

(c). What are bolted connections with neat sketch?

(d). Differentiate between strut and column?

(e). What are end bearings?

Q 4. Attempt **any two** questions: (10x2=20)

(a). Explain different types of Riveted joints with illustrative diagram?

(b). Explain the following terms:

(i) Gauge

(ii) Pitch

(iii) Edge distance

(iv) Gross diameter

(c). A 6mm thick angle section is jointed to a 10 mm thick gusset plate. The angle is supporting a load of 55 KN. Find out the number of 16 mm diameter power driven rivets?

Q 5. Attempt **any two** questions: (10x2=20)

(a). Calculate the safe load over a compression member of unsupported length of 4.8 m. The member is to be used in a transmission line tower in figure 1. The ends are held in position but not restrained in direction. The overall section of the member is 180 mm X 180 mm. assume $f_y = 250$ N/mm^2.

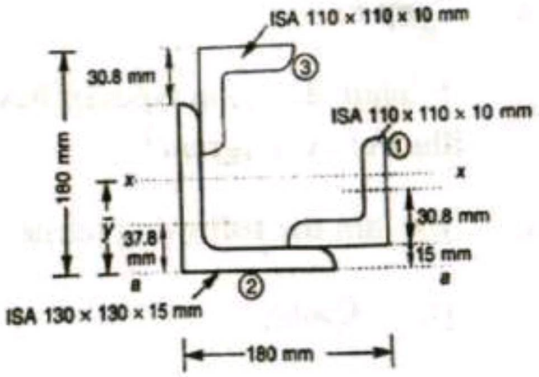

Figure 1

(b). Calculate the safe axial load for a stanchion I.S.H.B. 350 @ 710.2 N/m, 3.5 m high. It is to be used as an uncased column in a single storey building. The column is restrained in direction and position at both the ends. $f_y = 250$ N/mm²?

(c). Determine the allowable compressive load which the member shown in figure 2 can support, if the member is of 5.5 m effective length. $f_y = 250$ N/mm²?

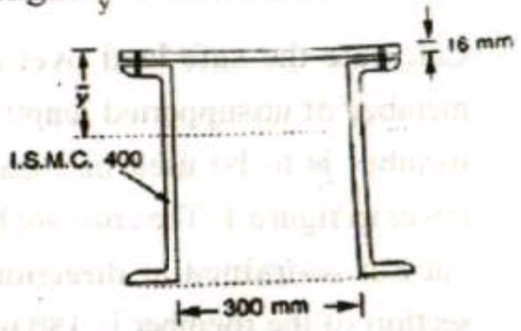

Figure 2