

- Q.29 State the various parts of a roof truss (CO6)  
 Q.30 What are the factors which affect the selection of type of truss? (CO6)  
 Q.31 Calculate the load carrying capacity of ISBM 250 @ 365.9 N/m to be used as a column. The effective length of the column is 3.5 m (CO7)  
 Q.32 Name list and give effective length of four different end conditions of columns. (CO7)  
 Q.33 Enlist the assumptions made in the theory of simple bending. (CO8)  
 Q.34 Name the sequence of activity in fabricating shop. (CO9)  
 Q.35 What are the purpose of foundation? (CO10)

#### SECTION-D

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 The tension member of a roof truss carries an axial pull of 150 KN. Design a single angle section for 2 m long member when it is fillet weld at ends (CO4)  
 Q.37 Design a single angle strut for a roof truss carrying a compressive load of 120 KN. The effective length of strut is 1.8 m. (CO5)  
 Q.38 ISBM 500 @ 852.5 N/m is to act as a beam for effective span 8 m. It carries a uniformly distributed load of 40 KN/m Calculate the maximum bending stress and shear stress induced in the beam. (CO8)

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### 5th Sem./ Civil , constr. Mgmt., Civil Engg (spl Highway Engg)

#### Subject:- Steel Structures Design

Time : 3Hrs.

M.M. : 100

#### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Steel is an alloy of (CO1)  
 a) Iron and Aluminum c) Iron and lead  
 b) Iron and Carbon d) Iron and Copper  
 Q.2 A channel section consists of (CO1)  
 a) 2 webs c) 2 webs and 2 flanges  
 b) 2 flanges d) 1 web and 2 flanges  
 Q.3 The size of the Rivet is expressed by the (CO2)  
 a) Diameter of the head  
 b) Diameter of the shank  
 c) Length of the head  
 d) Length of the shank  
 Q.4 Two structural members may be temporarily connected by connection (CO2)  
 a) Bolted c) riveted  
 b) Welded d) Pin  
 Q.5 What are the advantages of bolted connections? (CO3)  
 a) The process of erection of structure can be made faster  
 b) Skilled labors are not necessary  
 c) Connections do not involve the noise  
 d) All of the above

- Q.6 The allowable stress in axial tension for 10 mm thick angle section is (CO4)  
 a) 144MPa c) 148 MPA  
 b) 150 MPA d) 155MPA
- Q.7 Slenderness ratio has the unit as (CO4)  
 a) Mm c) Kelvin  
 b) Radian d) No unit
- Q.8 A strut is a (CO5)  
 a) Flexible member  
 b) Compressive member  
 c) Torsion member  
 d) Tension member
- Q.9 The maximum slenderness ratio of a compression member carrying compressive loads resulting from dead loads and superimposed loads should not exceed (CO5)  
 a) 180 c) 350  
 b) 250 d) 400
- Q.10 The effective length of a column effectively held in position and restrained in direction at both ends with actual length of column as  $L$  is (CO7)  
 a)  $0.67L$  c)  $0.85L$   
 b)  $L$  d)  $0.5L$

### SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 ISJB means (CO1)  
 Q.12 ISJC 100 @ 56.9 N/m stands for (CO1)  
 Q.13 Define Effective throat thickness. (CO3)  
 Q.14 Define End Return (CO3)

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- Q.15 List various types of sections used as tension members (CO4)  
 Q.16 Describe Net area of plate. (CO4)  
 Q.17 What are tacking rivets? (CO5)  
 Q.18 What is a compression members? (CO5)  
 Q.19 Define strut. (CO7)  
 Q.20 Define Buckling. (CO7)

### SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Differentiate between lap joint and butt joint (CO2)  
 Q.22 Define the efficiency of a riveted joint. How will you find the efficiency of a riveted joint (CO2)  
 Q.23 Calculate the value of a 20 mm diameter power driven shop rivet in a lap joint connecting plates of thickness 20 mm and 25 mm (CO2)  
 Q.24 Explain five advantages and disadvantages of welded joints over riveted joints (CO3)  
 Q.25 Calculate the strength of a tension member composed of 2 ISA 100x 75 x 8 mm placed back to back when longer leg is connected by 22 mm diameter rivets on the same side of gusset plate Take  $f_{st} = 150 \text{ Mpa}$ . (CO4)  
 Q.26 Enlist various steps of designing the tension members. (CO4)  
 Q.27 Define radius of Gyration and slenderness ratio (CO5)  
 Q.28 Design a single angle discontinuous strut, 3 m long to carry a load of 120 kN (CO5)

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