ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END (EVEN) SEMESTER EXAMINATION : MAY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech (Civil Engineering)	**Semester:**	VI
Paper Title :	Design of Steel Structure	**Paper Code:**	ECE43102
Maximum Marks :	40	**Time duration:**	3 Hours
Total No of questions:	8	**Total No of Pages:**	2
	1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer. **4.** IS 800:2007 and SP(6) – 1964 Should be allowed		

Answer all the Groups

Group A

Answer all the questions of the following **1 X 5 = 5**

1. a) As per IS 800:2007 how many number of Buckling class of cross-sections are there?

   b) Materials partial factor of safety (γ_{m1}), where resistance is governed by ultimate stress is_____.

   c) To calculate design compressive strength of compression member IS 800 2007 uses _____ formula.

   d) According to IS 800: 2007 what is the minimum size of weld?

   e) List out the constituents of structural steel.

GROUP –B

(Short Answer Type Questions)

Answer *any three* of the following **3 X 5 = 15**

2. Calculate the stress reduction factor of a compression angle section ISA 100X100X8 mm, subjected to eccentric loading. Effective length of the section is 4m connected by fixed weld at each end with gusset plate. Follow IS 800 2007.

3. Two plates of thickness 20 mm and 12 mm joined by a double cover butt joint. If it subjected to force of 200 KN. Find the no. of bolt required for the connection and also the show the complete diagram.

4. A pipe of 80 mm diameter and 10 mm thickness connected to a 16 mm gusset plate by fillet welding. It is subject to a factored load of 5 KN at distance of 1.5 m from the gusset face. Find the size of the weld assuming site welding and a steel grade of Fe410 MPa.

5. What is a lug angle? What are built- up sections and why are they used?

GROUP –C
(Long Answer Type Questions)
Answer *any two* of the following **2 X 10 = 20**

6. A single unequal angle 100 x 75 x 8 mm is connected to a 12 mm thick gusset plate at the ends with 6 number of 20 mm diameter bolts to transfer tension as shown in figure. Determine the design tensile strength of the angle if the gusset is connected to the 100 mm leg. Assume steel grade of Fe410.

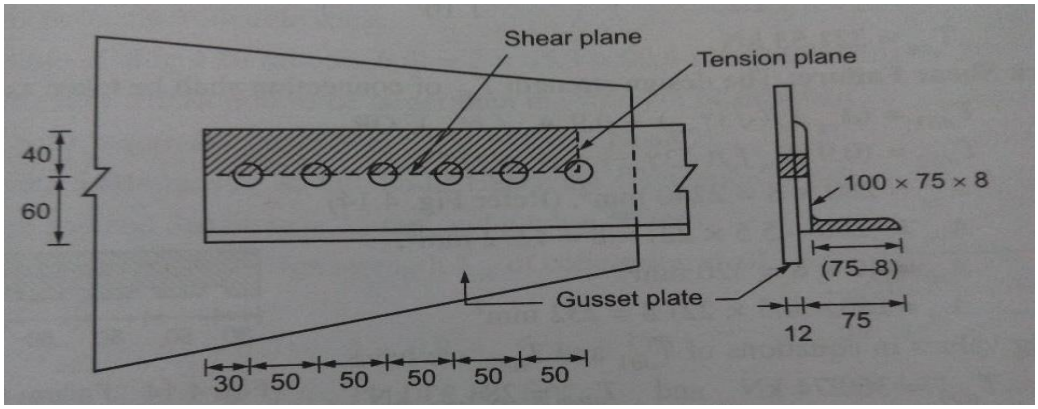

Figure: 1

7. Calculate the compressive resistance of a compound column consisting of ISHB 300 with cover plate of 350 X 20 mm on each side of the flange as shown in Figure 2. Length of the column is 5 m. Assume that the bottom face of the column is fixed and top face is rotationally fixed transition free. Take f_y = 250 MPa.

8. Calculate the safe load that can be carried by the bolt connection shown in the Figure: 3. Bolt grade is of 4.6 is used with 16 mm diameter and the gusset plate thickness is 10 mm.

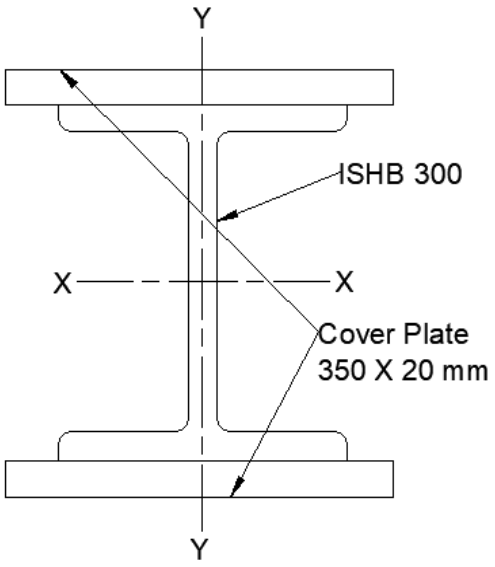

Figure: 2

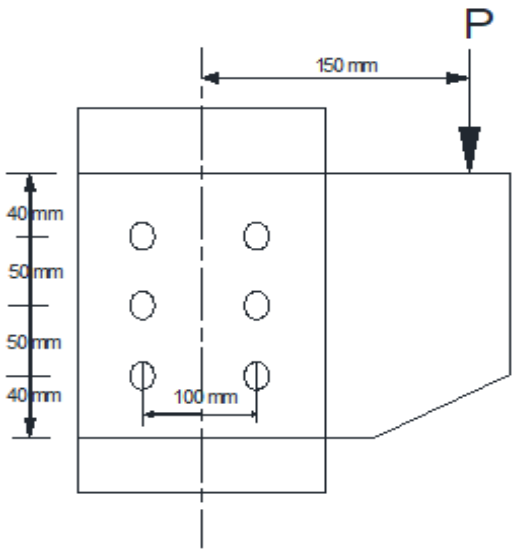

Figure: 3