Student Exam No._____

**GANPAT UNIVERSITY**

**B. Tech. Semester: 6th Sem Civil Engineering**

**Regular Examination May/June 2013**

**2CI 601 Design of Steel Structure**

**Time**: 3 Hours Total Marks: 70

Instruction: 1.All Questions are Compulsory
2. Figure to the Right indicates full marks.
3. Assume Suitable Data if necessary.
4. Allowed codes are.
IS 800:2007
IS 875 (Part I)
IS 875 (Part II)
IS 875 (Part III).

## SECTION I

**Que – 1** **Answer any three:** **12**

1. Explain Tacking Fasteners, give the criteria for it.
2. Explain Maximum Spacing and give the minimum criteria for it.
3. Give the codal provision of the effective shear capacity of bolt and explain minimum criteria.
4. Give the codal provision of Splice's in webs.
5. Design strength of block shear.

**Que – 2** Design a beam of span 6m carrying working dead load of 15kN/m & 10kN/m. the compression flange is laterally unrestrained throughout. **11**

**Que – 3** Design the beam to beam connection which is find out in Que – 2 is carried out end reaction of 200kN and moment 150kN/m. use 8.8 grade 20mm dia, and grade of steel 250N/mm$^2$. **12**

**OR**

**Que – 3** Assume the beam which is find out in Que – 2 is connected with two secondary beam ISMB 200 & ISMB and it transmit end reaction of 100kN to the beam use 8.8 grade 18mm dia, grade of steel 250N/mm$^2$. Design the connection **12**

**P.T.O.**

## SECTION II

**Que – 4** **Attempt any four** **12**

1. What is limiting vertical deflection of gantry girder for
   (a) Manually operated crane
   (b)EOT Cranes with capacity less than 500KN
   (c) EOT Cranes with capacity greater than 500KN
2. What is difference between surge load and drug load of cranes?
3. Define Sling, Sag tie and Pitch of Truss.
4. Write Design criteria as per IS Code for G.I.Sheet & A.C. Sheet
5. List the steps involved in design of gantry girder.
6. Why /Where Bearing stiffeners provided?

**Que – 5** Determine the gravity load at each panel and wind load for the French roof truss, which is located at industrial area at Kerala city. **12**

Given Data:

| | |
|---|---|
| Span of the Truss (L) | = 15m |
| Spacing of the Truss | = 4.5m |
| Rise of the Truss | = span / 4 |
| Height of Eaves | = 5.5m |
| Roof Covering | = G.I Sheet |
| Permeability | = Normal |
| Soil Type | = Medium |

**Que – 6** Determine the each member load of French roof truss which is mentioned in Que: 5. **11**

**OR**

**Que – 6** Design Welded plate girder for an effective span of 30m and carrying a uniformly distributed load of 30Kn/m and two point loads of 150kN each acting at 10m from both the ends. The girder is simply supported at ends. It is fully restrained at both ends against lateral buckling throughout the span. **11**

Given Load factor = 1.5

Yield stress of steel = 250MPa.

***"END OF PAPER"***