



## GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Summer 2021** - (Preview)

Course Code & Course Name : **CE353U - Design Of Still Structure**

Generated At : **19-04-2022 13:00:07**

Maximum Marks : **60**

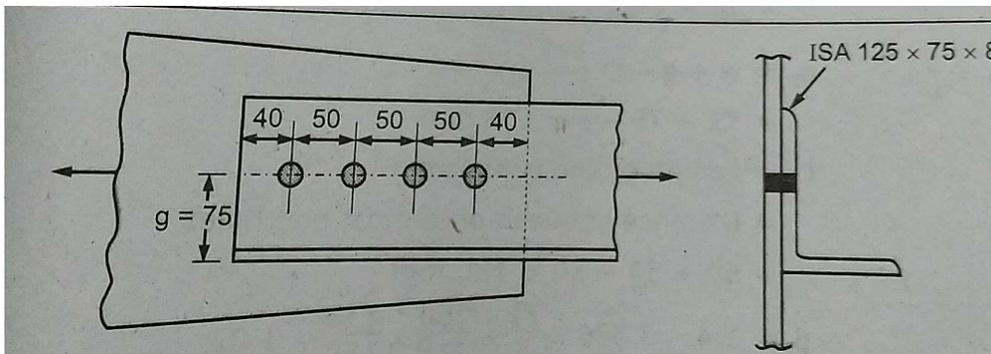
Duration : **3 Hrs**

**Edit** Print **Close** **Answer Key Submission Type:** No marking scheme and solution

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.
6. Use of IS 800-2007, IS-456 , IS- 875 and steel table is allowed

- 1) a) Explain built up section for the steel design. [5]
- OR**
- b) Design suitable fillet weld to connect a tie bar 80 x 8 mm to 10 mm thick gusset plate. joints has to be designed for full strength of the bar and welding on all three sides. [5]
- c) The longer leg of single angle ISA 125 x 75 x 8 mm is connected to a 10 mm thick gusset plate by 4 bolts of 18 mm diameter arranged as shown in figure. Determine the design tensile strength of the angle. Take  $f_y = 250 \text{ N/mm}^2$  and  $f_u = 410 \text{ N/mm}^2$  [10]



- 2) ) Design a simply supported steel beam of span 4 m effective span is laterally supported through out. It carries uniformly distributed load of 10 kN/m . Design a suitable section for a beam. [15]
- 3) a) Compare bolted and welded connections in the steel design. [5]
- OR**
- b) State and explain various types of rolled steel sections using diagrams/sketches. [5]
- c) Design a single angle section to carry compression of 100 kN . The centre to centre distance between the end connections is 2.0 m. Assume that the end connections is done by at least two bolts. Design the end connections also. The grade of steel is E250. Angle belongs to buckling class 'C'.  $f_{cd}$  varies from 227 MPa to 24.3 MPa. [10]
- 4) a) Write step by step procedure to design lacing system for built up column. [5]
- b) Design a simple slab base for an ISHB 350 @ 67.4 kg/m, column to carry a factored load of 1100 kN. Fe 410 grade steel, M25 Concrete, SBC of Soil = 200 kN/m<sup>2</sup>. Design for Column welded to base plate [10]

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