



**R-6715**  
**B. Arch. III (Sem. V) Examination**  
**May / June - 2010**  
**Structure - V**

Time : 3 Hours]

[Total Marks : 100

**Instructions :**

(1)

<p>नीचे दृशविले निशानीवाणी विगतो उत्तरवडी पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination :</p> <p><b>B. Arch. 3 (Sem. 5)</b></p> <p>Name of the Subject :</p> <p><b>Structure - 5</b></p> <p>Subject Code No. : <b>6 7 1 5</b> Section No. (1, 2,.....) : <b>Nil</b></p>	<p>Seat No. :</p> <table border="1" style="width: 100%; height: 20px;"><tr><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td><td style="width: 15%;"></td></tr></table> <p style="text-align: center; margin-top: 20px;">Student's Signature</p>						

- (2) Assume **suitable data** wherever **necessary** and specially mention it.
- (3) Figures to the **right** of each question indicate **full** marks.
- (4) Use of IS 875, and IS 800 is permitted.
- (5) Programmable **calculator** is not allowed.

1 (a) A Ship breaking company, at Calicut wants to construct a wear house of 25m × 60m at Calicut ship yard. Design a 'Pratt' type roof truss, its spacing, number of panel points, rise etc for a wear house. The height of truss up to eaves level is 12m. 4

(b) Calculate the dead load, and the live load for a selected roof truss in Q. 1(a). 10

**OR**

(b) Calculate the wind load per panel point for the above truss. If the total opening is 25% of wall area. 10

2 Design a discontinuous double angle truss member, having a 4.0m length. Which is subjected to a compressive load of 250 kN. The member is connected by two rivets at ends. 12

- 3 An ISA 150×75×8 is connected by a shorter leg, to the 10mm thick gusset plate by 12mm diameter rivets. Calculate the tensile load carrying capacity of a truss member. If the length of a member is 2.5m.
- 4 Write true or false with proper reason. 12
- (1) Performance of steel structure is better than that of a concrete structures in an earthquake zone.
  - (2) Load carrying capacity of compression member, depends on the slenderness ratio.
  - (3) An effective area of a member governs the load carrying capacity in compression.
  - (4) Permissible deflection for a beam is span / 300.
- 5 Design a filletted welded end connection for a tie member ISA 150x150x10, subjected to the 200kN tensile load. Take the permissible stress of weld as 100 N/sq.mm. 8
- OR**
- 5 Draw a plan and a section of a gusseted based steel footing. 8
- 6 Design a steel beam 'AB' - shown in Fig. 1. 14  
The thickness of R.C.C. slab is 120mm. The live load on a slab is 5 kN/sqm. Also check the section for deflection and shear.

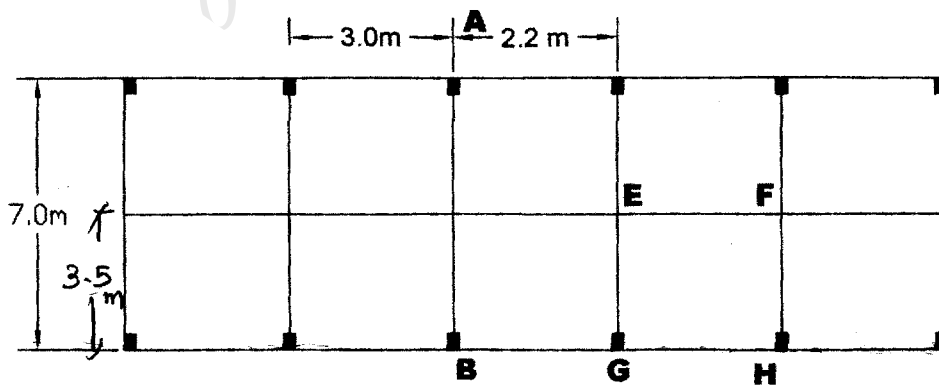


Fig. 1

- 7 Design a column, which is subjected to an axial load of 1200kN. The height of a column is 4.0m, and one end is fixed in a position as well as in rotation while another end is only fixed in position but not restrained against rotation. 12
- 8 Design a slab based footing for a column designed in Q. 7. The permissible stress for concrete and soil are 4 N/sq mm and 200 kN/sq m. 10
- 9 Draw a proper stiffened seated connection between the web of ISMB column and ISMB beam. 8