* U G - 6 7 1 4 *

UG-6714

B. Arch. III (Sem. V) Examination

May/June – 2012

Structural Design & System - V

(New Course)

Time : **2** Hours] [Total Marks : **50**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. Arch. - III (Sem. - V)**

Name of the Subject :

☛ **Structural Design & System - V**

☛Subject Code No. : **6 7 1 4** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Assume suitable data & specifically mention them.

(3) Use of IS 800, IS 875-part I, part II, part III, Steel table is allowed.

(4) Use of nonprogrammable Scientific calculator is allowed.

(5) Draw required sketches & drawing as per the requirement.

1 Calculate Dead load & Live load per panel point for a roof truss. Select proper roof truss for a hall of size 7 m × 15 m. Also design centre to centre spacing and rise for your chosen truss. **15**

OR

1 Calculate wind load per panel point for above chosen roof truss. Building is having medium opening & situated in Goa. Height of eaves level from ground is 12 m.

2 A single angle section ISA 100×75×8 is connected to a 12 mm thick gusset plate at the ends with five 16 mme diameter bolts to transfer tension through shorter leg as shown in fig.-1. Determine the design tensile strength of the angle section assuming that, the yield and ultimate stress of steel are 250 N/mm^2 and 410 N/mm^2 respectively. **14**

3 Calculate compressive strength of ISA 75×70×6 assuming that the angle is loaded through one leg when it is conneted by 1 bolt at each end. The length of member 2 m and fy=250 n/mm^2. **12**

OR

3 Determine an axial load carrying capacity for the Column section ISMB 450 @ 72.4 kg/m having length 6 m and fixed at both the ends. Take fy=250 n/mm^2, E=2×10^5 N/mm^2.

4 Calculate Moment of resistance of ISMB 550 @ 103.7 kg/m if span of a simply supported beam is 4.5 m and subjected to 40 kN/m uniformly distributed load. Zp=2711.98 cm^3. **12**

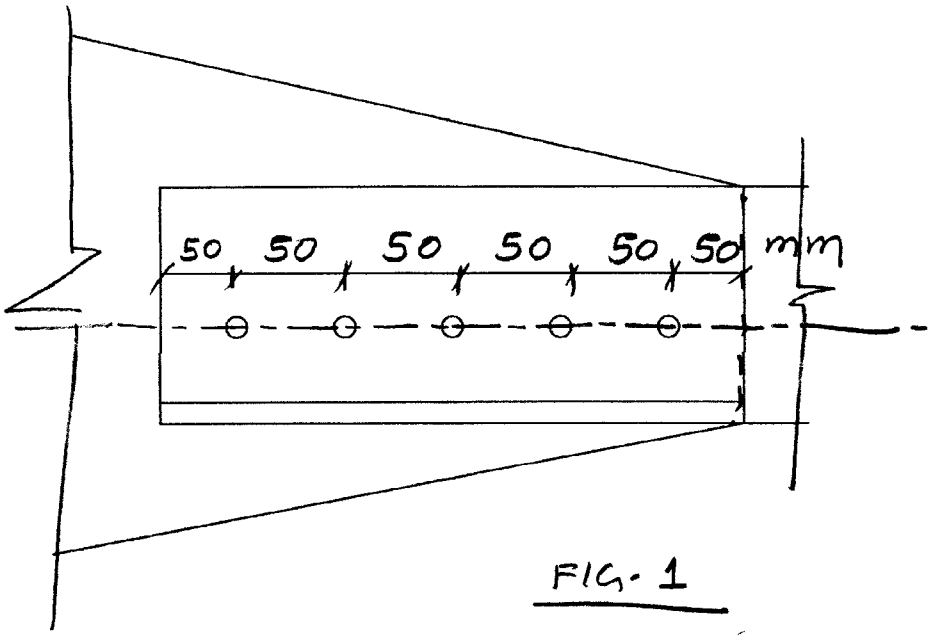

FIG. 1