



Structural Design & Drawing - II (1060)

P. Pages : 3

Time : Four Hours

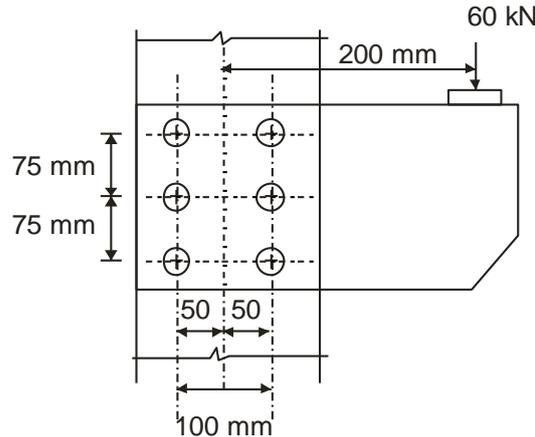
Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any one** question from each unit.
5. Use of non programmable calculator is allowed.
6. Ref IS 800, IS 875, steel table is permitted.
7. Assume Data wherever necessary.
8. $F_y = 250$ MPa.

UNIT - I

1. a) Explain different modes & failure of rivetted Joint. 8
b) An eccentrically loaded rivetted joint is as shown in figure. Calculate the maximum stress in the rivets, if the diameter of the rivets is 22mm. 17



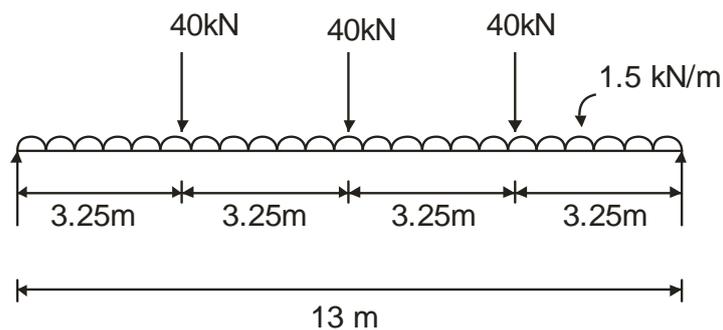
2. Design a tension member subjected to an axial pull of 200 kN by using two unequal angles 25
 - a) Placed back to back with their longer legs connected on the same side of the gusset plate by 16 mm rivets.
 - b) Placed back to back with their longer legs connected on both side of the gusset plate by 16 mm rivets.

UNIT – II

3. Design a suitable built up section for a steel column to carry an axial load of 1200 KN. The effective length of the column is 5.8 meter. Lacing has been used to connect its different elements. Use two channels. **25**
4. Design a roof truss : **25**
 Span of the truss = 24.00 m
 Spacing of trusses = 4.50 m.
 AC – sheets are use for roof covering.
 Design only top chord and bottom chord members.

UNIT – III

5. Design the simply supported welded plate Girder of span 20 m carrying a uniformly distributed load of 100 KN/m throughout the span. **25**
6. Design a floor beam supporting joists over a span of 13 m as shown below. Assume self wt of a beam = 1.5 KN/m. **25**



UNIT – IV

7. a) Design a slab base for a column consist of ISHB 300 carrying a axial load of 1000 KN. **10**
 Take allowable bearing pressure on concrete as uN/mm^2 . SBC of soil is $250KN/m^2$.
- b) Design the gusseted base for the above problem in Ques. No. 7 (a) **15**

8. Design the foot over Bridge for the following Data :

25

Effective span = 20 m

Clear width of pathway = 2.5 m

Flooring consist of Timber blanks with self wt of 8 KN/m^3 .

Live load = 4 KN/m^2 .

It is required to design member - U_4U_5 , L_4L_5 , U_0L_0 and U_0L_1
 Height of Truss = 1.8 m.

