Total No. of Questions : 6]

SEAT No. :

P4444

[Total No. of Pages : 2

[5255]-106

M.E. (Civil - Structures)

ADVANCED DESIGN OF METAL STRUCTURES

(2008 Course) (Semester - I)

Time : 4 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Solve any two questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Use of Calculator and relevant IS codes is allowed.***
6) ***Assume Suitable data if necessary.***

SECTION-I

Q1) Suggest structural configuration of hoarding structure to be installed at height of 35 m above ground level. The display board is of dimensions 30 m wide, 15 m height. Calculate the loads due to wind on the members of support structure. Draw free body diagram of structures showing the forces and reactions. **[25]**

Q2) a) Explain fabrication of castellated beam. How does it affect sectional properties. **[10]**

b) Calculate the sectional properties of castellated beams with ISMB500 converted to castellated beam. **[15]**

Q3) a) Compare steel and aluminum structural sections. And its applications, advantages, disadvantages. **[12]**

b) Design simply supported beam when loaded with UDL of 25 kN/m on span of 4 m. Use suitable aluminum section. Sketch details of design. **[13]**

P.T.O.

SECTION-II

Q4) a) Differentiate by geometry of Microwave tower and a transmission tower carrying high tension electric wire. Indicate all important structural components. **[13]**

b) Draw free body diagram of Transmission tower with high tension wires attached. **[12]**

Q5) a) State advantages and disadvantages of tubular structural sections used in steel structures. **[6]**

b) What are the design considerations of tubular scaffolding structure. **[6]**

c) Design tubular scaffolding support structure for RCC bridge deck slab 300 mm thick, span between beams is 7 m. **[13]**

Q6) a) Explain manufacturing of light gauge structural members. Enlist its advantages over conventional sections. **[10]**

b) Design the light gauge strut to carry axial compression of 200 kN. The effective length of strut is 3.3 take fy=235 N/mm^2. **[15]**

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