

M.E., DEGREE EXAMINATIONS: JUNE/JULY 2013

Second Semester

STRUCTURAL ENGINEERING

SEE507: Advanced Steel Structures

Time: Three Hours

Maximum Marks: 100

Answer ALL Questions:-

PART A (10x1=10 Marks)

1. What are the advantages and disadvantages of bolted connections?
2. What are the requirements of a good connection in steel work?
3. What are the assumptions made in the industrial building?
4. What is meant by built up section?
5. Draw a neat sketch of a micro wave tower and name the parts.
6. What are the advantages of cold formed steel structures?
7. At what circumstances Z purlins are preferred?
8. What are the basic assumptions made in the design of the towers
9. Define plastic design
10. What are the factors affecting the limit state design?

PART B (5 x 16 = 80 Marks)

11. a) The span of knee roof trusses used over an industrial building 32m long is 20m. The spacing of roof trusses is 4m. The pitch of roof truss is 1 in 4. The galvanized corrugated iron sheets are used for roof covering. The basic wind pressure 1kN/sq.m and there is no snow fall. The height of eaves above ground level is 10m. Propose a suitable type of roof truss. Determine the loads at the various points due to dead, live load, and wind load. Determine the reactions also.

(OR)

- b) Design the column supporting the roof trusses for the industrial of the span of knee roof trusses used over an industrial building 28m long is 180m. The spacing of roof trusses is 4m. The pitch of roof truss is 1 in 4. The galvanized corrugated iron sheets are used for roof covering. The basic wind pressure 1kN/sq.m and there is no snow fall. The height of eaves above ground level is 10m.

12. a) An ISLB 400@0.569kN/m transmits an end reaction of 250kN to the flange of an ISHB300@0.588kN/m column. Design stiffened seated connection. Provide a single stiffener angle.

(OR)

- b) An ISMB 350@0.524kN/m transmits an end reaction of 100kN to the flange of column ISHB 250@0.310kN/m. Design an unstiffened welded seat connection

13. a) Two channel sections with bent lips 200mm x 80mm are connected with webs to act as column. The thickness of channel is 3.2mm. The depth of lips is 25mm. The effective length of column is 5.40m. Determine the safe load carrying capacity of the section.

(OR)

- b) Two channel sections without bent lips 180mm x 50mm are connected with the webs to act as a beam. The thickness of channel section is 2mm. The effective span of a simply supported beam is 4m. Determine the maximum UDL including self weight, which may be supported by the beam. The beam is laterally supported throughout its length.

14. a) Describe the step by step involved in the design of tower foundations.

(OR)

- b) Explain steps involved for the design of members in micro wave towers by considering various loads.

15. a) Explain in detail of the probabilistic basis of loads and resistance factors -LFRD by using ultimate and serviceability limit states.

(OR)

- b) Describe the steps involved in the design of axially loaded members.
