SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
M.Tech I Year II Semester Supplementary Examinations February 2018
Advanced Structural Steel Design
(Structural Engineering)

Time: 3 hours   Max. Marks:**60**

(Answer all Five Units **5 X 12 =60** Marks)

UNIT-I

1	a	Write a short note on local buckling of compression elements	4M
	b	Determine the allowable load on a hat of dimensions 100mm x 60 mm x 6mm section with a 28 mm lip is to be used as concentrically loaded column of 4.0 mm. Assume that column is pinned at both the ends. Take fy =235 N/mm^2.	8M

OR

2	a	Write a short note on types of sections used in light gauge steel structure	4M
	b	A beam has to carry a superimposed load of 2.5 kN/m, over an effective span of 3 m. design a hat section. Yield strength of steel is fy=235MPa.	8M

UNIT-II

3	a	Explain the design principles of transmission line towers	8M
	b	Write about the various loads acting on transmission towers	4M

OR

4	A portal frame ABCD with fixed foot at A and hinged foot at B has stanchions 4 m high and beam of 5 m span. Horizontal point load of 30 kN is acting at C. If the whole beam carries a point load of 100 kN at mid span. Using load factor of 1.5, calculate the collapse Moment	12M

UNIT-III

5	a	What is limit state of collapse in flexure and shear? Explain in detail	6M
	b	i)characteristic strength ii) characteristic load	6M

OR

6	a	Explain about limit state of serviceability.	6M
	b	What are Lug angles? Write down the applications of lug angles	6M

UNIT-IV

7	Design a double angle section attached on either side of a gusset plate for a tension member of a roof truss to carry a tensile force of 190 KN. The member is subjected to the possible reversal of stress due to the action of wind. The effective length of the member is 3 m. use 22 mm shop bolt of grade 4.6 for the connection	12M

OR

8	Determine the strength of a double angle section ISA 100X100X10 mm connected on same side of a gusset plate of thickness 12mm. Assume 6,20mm bolts of grade 4.6 is used.	12M

UNIT-V

9	Design a laterally unsupported beam of span 6m carrying a UDL of 30kN/m. Assume that beam is supported over a wall of 300mm. take Fe415 steel.	12M

OR

10	Design a double angle compression member if its actual length is 4.8m. It's one end may be assumed fixed and the other end hinged. The grade of steel is Fe415 and yield stress of 250 MPa	12M

*** END ***