B.E.(with Credits)-Regular-Semester 2012 - Civil Engineering Sem VI

CE601 - Design of Steel Structures

P. Pages : 2 **GUG/W/16/5332**

Time : Four Hours * 3 5 2 1 * Max. Marks : 80

Notes :
1. All questions are compulsory.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. I.S.I. Hand Book for structural steel section. I.S. code 800-2007 (Revised), I.S. 875 may be consulted.

1. Enlight features of IS 800-2007 w.r.h. IS 800-1984. **13**

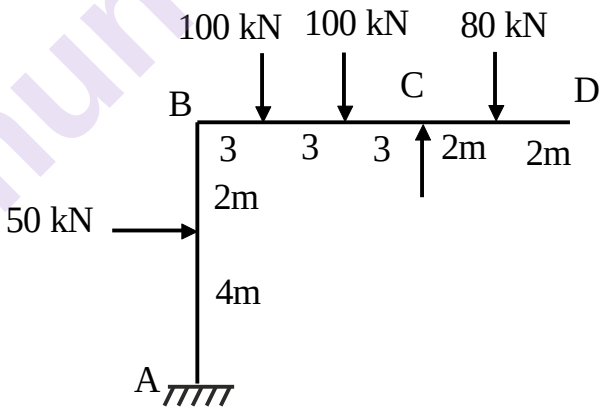
OR

2. Design a butt connection with two cover plates to connect 2 Flats 150 x 12mm. Also find the efficiency of connection. Use 20mm & PDSR. fy=250MPa. **13**

3. Design a discontinuous tacked shut using 2 unequal ISA with longer leg outstanding on one side of 15mm thick gusset plate to carry 400 kN axial load. fy=250 mPa. **14**

OR

4. Find collapse load factor for following frame. **14**



M_P is uniform

5. Design a simply supp. builtup laterally restrained beam having eff. span of 10m to carry udl of 40 KN/m on LHS half span. Use IS 800-2007 specification fy=250mPa. **13**

OR

6. Design a lattice girder using ISA simply supp. on eff span of 10m to carry 20 KN/m udl on whole span. Use IS 800-2007 specifications. fy=250mPa. **13**

7. Design a laced builtup column to carry P=1000 kN, M=150 KNm about major axis and V=100 kN. Use 2I section for column components fy=250MPa Apply IS 800-2007 specifications. Sketch all structural details. **20**

OR

8. Design a base plate to column ISHB 300 @ 63kg/m carrying 800kN axial load, 100kNm B.M. and 50kN s.f. in web. Concrete grade of block is M25. SBC of soil is 300 kN/m^2. Use IS 800-2007 specifications. fy=250MPa. Sketch the structural drawing. **20**

9. Design a beam-column connection to transfer the end reaction 400 kN and B.M. 100 kNm from beam to flange of column. fy=250MPa. **20**
Beam - ISMB 400 @ 61.62 kg/m
Column - ISHB 350 @ 67.44 kg/m
Sketch all structural details.

OR

10. a) What are the serviceability conditions in limit state design of steel structures. **10**

b) How the precaution can be taken to overcame the fatigue problem in steel structures. Explain in details. **10**

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