

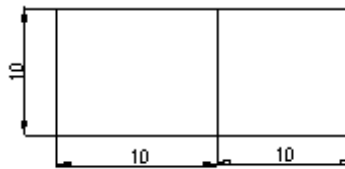
III B.Tech II Semester Supplementary Examinations, April/May 2005
AEROSPACE STRUCTURES-II
(Aeronautical Engineering)

Time: 3 hours

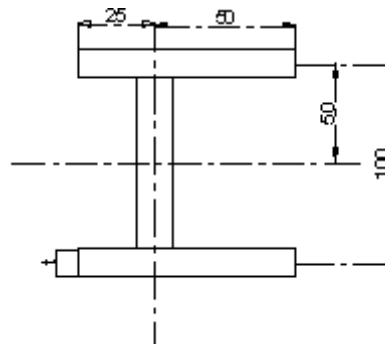
Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Calculate the internal shear flow for the multcell tube system subjected to a torsion of 10,000 N-cm, for 1 mm thick section cells as shown. Take $G = 20 \text{ Gpa}$.



2. What is a Neuber tube? Show that a thin walled circular tube of constant thickness is a Neuber tube.
3. Describe Gerard's method of calculation of crippling stress.
4. Write short notes on
- (a) Inter-rivet buckling stress
 - (b) Sheet effective width.
5. Locate the shear center 'O' for thin unbalanced I – section shown in figure. Assume thickness 't' constant throughout the section.



6. Write short notes on
- (a) Stress resistant web beams
 - (b) Wagner beams.

7. A beam of rectangular section, 80 mm wide and 120 mm deep is subjected to a BM of 120 N-m. The trace of the plane of loading is inclined at 45° to the V-V axis of the section. Locate the neutral axis of the section. Find the bending stress by neutral axis method.
8. Figure shows the regular hexagonal cross-section of a thin walled beam of sides 'a' and constant wall thickness 't'. The beam is subjected to a traverse shear force 'S', its line of action being along a side of the hexagon as shown. Find the rate of twist of the beam in terms of 't', 'a' and 's' and shear modulus 'G'. Plot the shear flow distribution around the section, with values in terms of 'S' and 'a'.

