

Roll No.

Subject Code—6020

M. Tech. (ME) EXAMINATION

(First Semester)

(Main & Re-appear Batch 2011 Onwards)

ADVANCED MECHANICS OF SOLIDS

MELP-711

Time : 3 Hours

Maximum Marks : 70

Note : Attempt any *Five* questions. All questions carry equal marks.

1. Find the max. stress in a beam column having both the ends fixed when subjected to eccentric axial load and a non-centric point load.
2. A 7.2 cm by 7.2 cm by 1.2 cm angle is used as cantilever of length 50 cm with the 3 cm leg horizontal. A load of 1000 N is applied at 1 m from the fixed end, the line of action passing through the centroid and is inclined at 30 degrees to the vertical determine the position of neutral axis and maximum stress setup.

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P.T.O.

3. Find the magnitude of principal stresses and their directions for the given stress system :

12.31	4.2	0.84
4.2	8.96	5.27
0.84	5.27	4.34

4. Explain the following :

- Prove principal planes are orthogonal
- Stress Invariants.

5. Write short notes on the following :

- Finite, semiinfinite and infinite beams
- Point contact stresses.

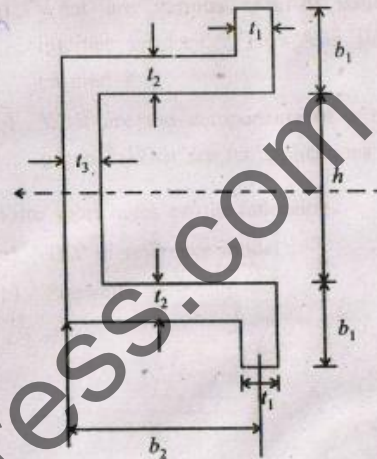
6. State and derive the basic differential equation for bending of thin plates subjected to transverse loading.

7. Explain various types of stress concentration factors. Explain different methods to reduce stress concentration in mechanical components.

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8. Locate the shear center for the section shown below :



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