(PG410) Roll No. .....

S.C.No.—21703403

M. Sc. EXAMINATION, 2023

(Fourth Semester)

(2021 (Mam/Re-appear/Improvement))

MATHEMATICS

21MTH-403

Mechanics of Solids-II

Time : 3 Hours Maximum Marks : 80

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

Unit I

1. (a) Write Beltrami-Michell compatibility conditions for plane strain deformation.

   (b) Give an example of plane strain deformation.

   (c) Define plane stress problem.

   (d) Define torsional rigidity of the beam.

   (e) Define viscoelastic material with the help of examples.

   (f) Define Maxwell model.

   (g) Define spherical waves.

   (h) Define surface waves.

Unit II

2. Obtain stresses and displacements for a thick-walled tube under external and internal pressure.

3. Obtain solution in terms of Airy's stress function for plane strain problem.

Unit III

4. Derive solution for torsion of beams with triangular cross-section.

5. Explain one-dimensional Ritz method.

Unit IV

6. Derive constitutive equation for a Maxwell model. Discuss Creep phase and Relaxation phase for a Maxwell model.

7. Derive constitutive equation for a standard linear solid model. Discuss creep phase and Relaxation phase for a Standard linear solid model.

Unit V

8. Derive the stationary type solution of wave equation in Cartesian coordinates.

9. Derive frequency equation for surface love waves.