3. Deduce the Rayleigh -Lamb frequency equations for (i) symmetric and (ii) anti symmetric mode of vibrations of an infinite isotropic elastic plate.   18

4. Deduce Love's equation of longitudinal vibration of a thin rod taking luteral inertia effect into consideration.   18

Master of Science Examination, 2019

(2nd Year, 2nd Semester)

Unit – 4.4 (B-2.16)

Elastodynamics-II

Time : Two hours   Full Marks : 50

All symbols and notations have their usual meanings;

Answer Questions no.1 and any two from the rest.

1. Let ϕ_r and ψ_r be the reflected plane p-wave and SV-wave respectively generated at a point of a plane isotropic elastic surface of a semiinfinite medium by an incident p-wave ϕ_i at an angle θ_0 with the vertical axis inside the medium. Deduce their amplitude ratios.   14

OR

Obtain the pochhammer, frequency equation for longitudinal vibration of an infinite circular cylindrical rod.

2. Obtain the SH-wave solition of an isotropic elastic medium due to incident waves on a finite crack subject to the following boundary conditions :

$$\tau_{yz}(x,o) = -T_{0,} \ |x| \le 1$$

$$\upsilon_y(x,0) = 0, |x| > 1$$

Where τ_0 is a known constant and the time factor e^{-iwt} is assumed to be associated with all fields.   18

[Turn over