8^{TH} Semester

Vibration & Elements of Aero elasticity

Subject code-PAE8J001

MODULE 1 :
(BASIC MOTIONS)

Simple harmonic motion – Terminologies – Newton's Law – D' Alembert's principle –Energy Methods

MODULE 2 :
(SINGLE DEGREE OF FREEDOM SYSTEMS)

Free vibrations – Damped vibrations – Forced Vibrations, with and without damping – support excitation – Vibration measuring instruments.

MODULE 3 :
(MULTI DEGREES OF FREEDOM SYSTEMS)

Two degrees of freedom systems – Static and Dynamic couplings vibration absorber- Principal co-ordinates, Principal modes and orthogonal condition – Eigen value problems. Hamilton's principle-Lagrangian equation and application – Vibration of elastic bodies-Vibration of strings- Longitudinal, Lateral and Torsional vibrations.

MODULE 4 :
(APPROXIMATE METHODS)

Rayleigh's and Holzer Methods to find natural frequencies.

MODULE 5:
(ELEMENTS OF AEROELASTICITY)

Concepts – Coupling – Aero elastic instabilities and their prevention – Basic ideas on Wing divergence, loss and reversal of aileron control – Flutter and its prevention.