VIBRATIONS, WAVES AND E.M. THEORY–I

Panjab University, Chandigarh

Total Teaching hours : 30

UNIT I

Simple harmonic motion, energy of a S.H.M., Compound pendulum, Torsional pendulum, Electrical oscillatons, Transverse vibrations of a mass on a string, Composition of two perpendicular S.H.M. of same period and of period in ratio 1: 2, Decay of free vibrations due to damping, differential equation of motion, types of damping, determination of damping coefficient, Logarithmic decrement, Relaxation time and Q-factor, Electromagnetic damping (Electrical oscillator).

UNIT II

Differential equation for forced mechanical and electrical oscillators, Transient and steady state behaviour, Displacement and velocity variation with driving force frequency, variation of phase with frequency, resonance, Power supplied to an oscillators and its variation with frequency, Q-value and band width, Q-value as in amplification factor. Stiffness, coupled oscillator, Normal co-ordinates and normal modes of vibration, Inductance coupling of electrical oscillators.