SEMESTER- II

PHYSICS

Important Questions.

UNIT- I

15 Marks :

1. Equation of motion of simple harmonic Oscillator and find its Solution [1st and 2nd treatment]

2. Combination of two mutually perpendicular harmonic waves of equal frequencies.

3. Determination of acceleration due to gravity by using compound pendulum.

4. Super position of harmonic waves.

5. Lissajous figures, Mechanical and Optical method, Nature of Lissajous figures and its graphical representation.

4 Marks :

6. What is Simple harmonic motion? Write its Physical Significance.

7. Torsion pendulum and its Time period.

8. Compound pendulum and its Time period.

9. Problems releated to displacement, Velocity, Maximum velocity, Time period, frequency.

UNIT- II

15 Marks:

1. Define Damped Oscillator and describe the eq^n of motion of DHO and its Solution.

2. Forced Oscillator (or) Forced Vibrations and its Solution and Coupled Oscillator.

4 Marks:

3. Define Damped, Undamped and forced Oscillations.

4. Different types of damped Conditions. (Over damped Condition, Critical damped Condition and under damped Condition).

5. Energy and power dissipation of DHO (upto power dissipation).

6. Derive Equation of relaxation time, logarithmic decrement and Quality factor.

7. Derive equation for Amplitude resonance and Velocity resonance.

8. Derivation for under damped Condition and its time period.

UNIT - 3

15 Marks :

1. Velocity of transverse waves along a Streched String
2. Modes of Vibrations of streched string clamped at both ends.
3. Explain the formation of Harmonics and Overtones.
4. Characteristics impedance of a string to transve-rse wave.

4 Marks :

5. Discuss the Vibrating of bars
5. Laws of Transverse Vibrations of String.
6. Energy Transport.
7. General SHM Solution and its physical significa-nce.
8. General wave equation and its Solution (or) General longitudinal wave equation and its Solution.
9. Define Transverse waves and Longitudinal waves.
10. Related problems. $\left[\vartheta_1 = \frac{1}{2l}\sqrt{\frac{T}{\mu}}, \vartheta_2 = \frac{2}{2l}\sqrt{\frac{T}{\mu}}, \vartheta_3 = \frac{3}{2l}\sqrt{\frac{T}{\mu}} \right]$

UNIT-IV

IS Marks :-

1. Velocity of Longitudinal wave in a bar.

2. Longitudinal vibration of a bar fixed at both ends, free at both ends and fixed at one end and free at another end.

8. ~~Trans~~ General Solution of Longitudnal wave equation. and its boundary conditions.

3. Transverse Vibrations of a bar and its Solution.

4. Transverse Vibration in a bar free at both ends and clamped at one end and free at other end.

4 Marks :-

5. Tunning fork, frequency.

6. Define Longitudinal, Transverse, Torsional Vibrations