UNVERSITY OF EDUCATION
"UExam" Semester-II, 2019

BS Physics, Session:2018-2022

Course Code: PHYS1115
Subject: Waves and Oscillations

No. 174

Roll No. (in fig.)_____

Roll No. (in words)_____

Candidate's Signature.

Signature of Addl. Supdt.

SECTION: I (MCQ's)

Time Allowed: 20 Minutes **Max. Marks: 18**

NOTE: Encircle the correct/ best answer in each of the followings. Each Question carries 1 mark. Use of remover carries zero mark. Cutting and Overwriting is not allowed.

Q1.

- Motion of Simple Pendulum is
  (a) Circular motion (b) Angular motion
  (c) SHM (d) Rotatory motion
- The velocity of Harmonic Oscillator is Maximum at mean Position when
  (a) $x = x_o$ (b) $x = 0$ (c) $x = \frac{1}{2}kx$ (d) $x = kx_o$
- The maximum displacement of Simple Harmonic Oscillator from position is.
  (a) Displacement (b) Velocity (c) Amplitude (d) Acceleration
- The reciprocal to time period is equal to
  (a) Frequency (b) Vibration (c) Displacement (d) Amplitude
- The total mechanical energy of Simple Harmonic Oscillator is
  (a) Conserved (b) Greater (c) Minimum (d) Destroyed
- In case of Simple pendulum, for small amplitude $\sin\theta$
  (a) $\sin\theta = maximum$ (b) $\sin\theta = minimum$ (c) $\sin\theta = 0$
  (d) $\sin\theta > 0$
- The oscillator which moves in a resistive medium under resorting force is
  (a) Simple Harmonic (b) Damped oscillator (c) Un-damped oscillator
  (d) none of them
- The short wave produced in a medium when disturbance created for a short time is called
  (a) Wave pulse (b) wave train (c) wave front (d) wave function
- A series of wave pulse is called
  (a) Wave motion (b) Wave function (c) Wave train (d) Wave pulse
- The line or surface on which the disturbance has the same phase at all points is called
  (a) Wave pulse (b) Wave front (c) Wave function (d) Wave train

- The waves in which the medium moves in direction of propagation of the wave is called
  (a) Stationary Wave (b) Travelling Wave (c) Transverse Wave
  (d) Longitudinal Wave
- The wave form of periodic oscillations having fixed frequency and wave length is called
  (a) Square Wave (b) Sine Wave (c) Alternating Wave
  (d) Mechanical Wave
- The interference of two identical waves, they are travelling in the same direction and combine together out of phase is called
  (a) Constructive Interference (b) Destructive Interference
  (c) Diffraction (d) Polarization
- The places of zero displacements are called
  (a) Nodes (b) Anti nodes (c) Standing waves
  (d) Phase difference
- The Doppler effect is also applicable to
  (a) Sound waves (b) light waves (c) both a & b
  (d) None of them
- The value ± is possible when
  (a) $\frac{\Delta\varphi}{2} = 0, \pi, 2\pi \ldots\ldots$ (b) $\Delta\varphi = \frac{1}{2}, \frac{3}{2}, \frac{5}{2} \ldots\ldots$ (c) $\frac{\Delta\varphi}{\pi} = 2$
  (d) $\frac{2}{\Delta\varphi} = 0, \pi, 2\pi \ldots\ldots$
- The distance between node and next antinode is equal to
  (a) λ (b) $\lambda/2$ (c) $\lambda/4$ (d) 2λ
- The product of frequency and wavelength of a wave is called
  (a) Velocity of wave (b) Phase velocity (c) Time period
  (d) Transverse velocity

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Time Allowed: 100 Minutes **Max. Marks: 42**

Section II (Short Answer)

Q.2- Write short answers of the following. **3x6 = 18**

i. Define Restoring Force.
ii. Differentiate between Longitudinal and Transverse waves.
iii. Derive an expression for Standing waves.
iv. Define Beats.
v. What do you know about Doppler Effect?
vi. Define Phase velocity.

Section III (Essay Type)

Answer the following Questions **6x4 = 24**

Q.3. Derive an equation of Motion of Simple Pendulum.
Q.4. What is Wave motion? Discuss about it