

# AAFAQ ACADEMY – KASUR

Paper: Physics

Chapter (7)  
OSCILLATIONS

Class: F.Sc. Part – I

Name: \_\_\_\_\_ Roll No: (in words) \_\_\_\_\_

## EVENING GROUP OBJECTIVE TYPE

**Total Marks: 12**

**Paper Code:** \_\_\_\_\_

**Total Time: 10 Minutes**

**NOTE:** Write your **Roll No.** in space provided. Using lead pencil will result in loss of marks.

**Q.No.1:** You have four choices for each objective type question as A,B,C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Sr. No.	QUESTION	A	B	C	D
1.	At the mean position the acceleration of a particle executing S.H.M. is	Maximum	Minimum	Zero	All of these
2.	The velocity of a particle executing S.H. M. is $v =$	$x_0 \cos \omega t$	$\omega x_0 \cos \omega t$	$\cos \omega t$	$\omega \cos \omega t$
3.	The motion of a pendulum of a wall clock is	Angular	Orbital	Circular	S.H. Motion
4.	The body oscillates due to a	Gravitational force	Inertia	Restoring force	Both (B) and (C)
5.	The time period of projection of a particle moving in a circle is	$T = \frac{\omega}{2\pi}$	$T = \frac{2\pi}{\omega}$	$T = \frac{2\pi}{f}$	$T = \frac{f}{2\pi}$
6.	The length of second pendulum is at the surface of moon	0.25m	0.35m	0.6m	0.16 m
7.	Velocity of a particle executing S.H.M is:	$\omega(x^2 - x_0^2)$	$\frac{1}{\omega}(x^2 - x_0^2)$	$\omega\sqrt{x_0^2 - x^2}$	$\frac{1}{\omega}\sqrt{x_0^2 - x^2}$
8.	If length of simple pendulum becomes one fourth then its time period	Half	Twice	Four Time	Six times
9.	The frequency of simple pendulum is directly proportional to	$\frac{1}{\sqrt{\ell}}$	$\frac{1}{\sqrt{g}}$	$\sqrt{g}$	$\sqrt{g\ell}$
10.	When pendulum is at extreme position then its K.E.	Maximum	Zero	Negative	None of these
11.	The amplitude of lead bob is much greater than that of	Rubber bob of small size	Pith ball of small size	Copper bob of small size	None of these
12.	The angular frequency of a body executing S.H. M. is	f	$\frac{f}{2\pi}$	$2\pi f$	$\pi f$

## SUBJECTIVE TYPE

**Total Marks: 18**

**Time Allowed: 0 Hours 40 Minutes**

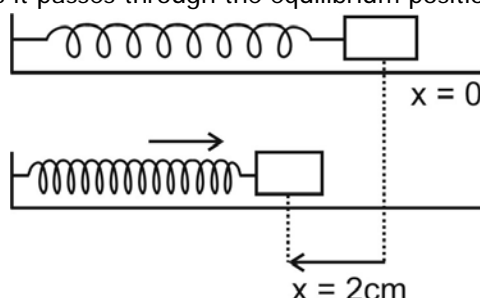
### SECTION – I (SHORT QUESTIONS)

**2. Attempt any FIVE questions. (5 × 2 = 10) Marks**

- i. Name the two characteristics of SHM.
- ii. Does frequency depends on amplitude for harmonic oscillators?
- iii. Does the acceleration of a simple harmonic oscillator remain constant during its motion? Is the acceleration ever zero? Explain.
- iv. Under what conditions does the addition of two S.H.Ms produce a resultant, which is also simple Harmonic?
- v. Describe some common phenomena in which resonance plays an important role.
- vi. In relation to SHM, explain the equation. (i)  $y = A \sin(\omega t + \phi)$  (ii)  $a = -\omega^2 x$
- vii. If a mass system is hung vertically and set into oscillations, why does the motion eventually stop?

### SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...
  - i. What is force constant? Show that a body execution SHM obey law of conservation of energy. (5)
  - ii. The spring is compressed through a distance of 2.0 cm and the block is released from rest. Calculate the velocity of the block as it passes through the equilibrium position,  $x = 0$ , if the surface is frictionless.



(3)

### SECTION – III (Practical)

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## EVENING GROUP

4. (a) Write answer of TWO questions. (2×2=4)
- i. a
  - ii. c
  - iii. v
  - iv. b
4. (b) Write procedure to determine the resistance of voltmeter by graph method. (3)
- (OR)**
- Write procedure to find the unknown high resistance by using neon flash lamp. (3)
4. (c) Answer the following questions on the basis of graph drawn between potential difference ( $V$ ) and charge ( $Q$ ). (4)
- i. What you conclude from the graph?
  - ii. Find the capacitance of capacitor from the graph.

Good Luck  
Ch. Khalid Mahmood Ashraf