

# RIZWAN ACADEMY – KASUR

Paper: Physics

Chapter (7 – 8)  
OSCILLATIONS + WAVES

Class: F.Sc. Part – I

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

## 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.	A body of mass 5kg has P.E 100J. its height from the ground is	10 m	8 m	5 m	2 m
2.	A second pendulum completes five vibrations in	5 seconds	2 seconds	3 seconds	10 seconds
3.	If the spring of spring constant K is cut into pieces, then spring constant for each spring is	$k$	$2k$	$\frac{k}{2}$	None of these
4.	The length of second pendulum is	98 cm	98.2 cm	99.2 cm	100 cm
5.	The angle $\theta = \omega t$ which specifies the displacement as well as direction of motion of the point executing SHM is known as	Phase	Critical angle	Plane angle	Solid angle
6.	Angular velocity of vibrating body is given by	$\omega = \frac{k}{m}$	$\omega = \frac{\sqrt{k}}{m}$	$\omega = \sqrt{\frac{k}{m}}$	$\omega = \frac{k}{\sqrt{m}}$
7.	If the pressure of the gas is doubled then the speed of sound is	Also doubled	Become half	Not affected	Increase by four time
8.	When the number of loops in stretched string increase, then the frequency	Decreased	Remain same	Also increases	None of these
9.	When a transverse wave is reflected from the boundary of denser medium it under goes a change of phase	$0^\circ$	$\frac{\pi}{2}$	$\pi$	$2\pi$
10.	The air space in a musical instrument increase	Pitch	Timber	Quality	Loudness
11.	In stationary longitudinal waves the air vibrations are longitudinal along the	Diameter of the pipe	Length of pipe	Radius of pipe	None of these
12.	The total energy of a particle executing SHM at any displacement x is given by	$k x$	$\frac{k}{x}$	$k x_0$	$\frac{1}{2} k x_0^2$

## 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. Under what conditions does the addition of two S.H.M's. produce a resultant, which is also simple Harmonic?
- iii. Describe some common phenomena in which resonance plays an important role.
- iv. In relation to SHM, explain the equation. (i)  $y = A \sin (\omega t + \phi)$  (ii)  $a = -\omega^2 x$ .
- v. Why does sound travel faster in solids than in gases?
- vi. How are beats useful in tuning musical instruments?
- vii. Is it possible for two identical waves traveling in the same direction along a string to give rise to a stationary wave?

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

**3. Do as directed...**

- i. Define interference and explain it in detail. (5)
- ii. Find the amplitude, frequency and period of an object vibrating at the end of a spring, if the equation for its position, as a function of time, is:  $x = 0.25 \cos \left(\frac{\pi}{8}\right)t$ . What is the displacement of the object after  $t = 2.0s$ ? (3)

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## SECTION – III (Practical)

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