

# RIZWAN ACADEMY – KASUR

Paper: Physics

Chapter (3 – 4)

Class: F.Sc. Part – I

## MOTION AND FORCE + WORK AND ENERGY

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 same force 'F' is applied respectively on two different masses $m_1$ and $m_2$ moving with acceleration $a_1$ and $a_2$ . Identify their mass acceleration ratio	$\frac{m_1}{m_2} = \frac{a_1}{a_2}$	$\frac{m_2}{m_1} = \frac{a_2}{a_1}$	$\frac{m_1}{m_2} = \frac{a_2}{a_1}$	All of these
2.	If $V_i$ is the velocity of projection and $\theta$ is the angle which the projectile makes with x-axis then the vertical component of velocity any time $t$ is	$v_i \cos \theta$	$v_i \sin \theta$	$v_i \cos \theta - gt$	$v_i \sin \theta - gt$
3.	Dimensions of impulse are similar to dimensions of	Work	Torque	Force	None of these
4.	A particle of mass $6 \cdot 5g$ moving along x-axis is located at $x_1 = 15m$ at $t_1 = 5s$ and $t_2 = 13s$ at $x_1 = 15m$ . Its average velocity is	$2 \cdot 4m \cdot s^{-1}$	$6 \cdot 0m \cdot s^{-1}$	$4 \cdot 45m \cdot s^{-1}$	$2 \cdot 25m \cdot s^{-1}$
5.	If the slope of the velocity-time graph is increasing with time at constant rate, it shows that the body has	Uniform negative acceleration	Average acceleration	Positive acceleration	Uniform retardation
6.	The ratio of dimensions of velocity and acceleration are	$[LT^{-1}]$	$[LT^{-2}]$	$[M^0 L^0 T]$	$[M^0 L^0 T^{-1}]$
7.	Power is a	Fundamental quantity	Scalar quantity	Vector quantity	None of these
8.	The consumption of energy of $6 \cdot 0W$ bulb in $2 \cdot 0min$ will be	$120 \cdot 0J$	$240 \cdot 0J$	$3600 \cdot 0J$	$720 \cdot 0J$
9.	The ratio of escape velocity on Earth and Moon approximately	$2 \cdot 0$	$3 \cdot 0$	$4 \cdot 0$	$5 \cdot 0$
10.	Which of the following is non-conservative force?	Elastic spring force	Electric force	Magnetic force	Tension in string
11.	Waves in ocean are produced due to	Tidal movement	Winds	Both (A) and (B)	Sunlight
12.	Which one is not the formula of P.E?	$mgh$	$\frac{1}{2}kx_0^2$	$-\frac{GmM}{R}$	None of these

### 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. Can the velocity of an object reverse direction when acceleration is constant? If so, give an example?
- ii. A man standing on the top of a tower throws a ball straight up with initial velocity  $v_i$  and at the same time throws a second ball straight down with the same speed. Which ball have larger speed when it strikes the ground ignore air friction that.
- iii. Define impulse and show that how it is related to linear momentum?
- iv. State the law of conservation of linear momentum, pointing out the importance of isolated system. Explain why under certain conditions, the law is useful even though the system is not completely isolated?
- v. An object has  $1J$  of potential energy. Explain what does it mean?
- vi. A boy uses a catapult to throw a stone which accidentally smashes a green house window. List the possible energy changes.
- vii. Calculate the work done in kilo joules in a lifting a mass of  $10kg$  (at a steady velocity) through a vertical height of  $10m$ .

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

- 3. Do as directed...**
- i. Define absolute potential energy and derive its relation. (5)
  - ii. A boy places a fire cracker of negligible mass in an empty can of  $40g$  mass. He plugs the end with a wooden block of mass  $200g$ . After igniting the fire cracker, he throws the can straight up. It explodes at the top of its path. If the block shoots out with a speed of  $3 \cdot 0m \cdot s^{-1}$ , how fast will the can be going? (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