AAFAQ ACADEMY – KASUR

Paper: Physics **Chapter (3)1** **Class: F.Sc. Part – I**

MOTION AND FORCE

Name: _____ Roll No: (in words) _____

EVENING GROUP

OBJECTIVE TYPE

Total Marks: 11 **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 car starts from rest and attains a speed of 40 $m \bullet s^{-1}$ in 20 s. Its average acceleration in $m \bullet s^{-2}$ is	**0.5**	**2.0**	**4.0**	**8.0**
2.	A body dropped from a tower with zero velocity, reaches the ground in $4 \bullet 0s$. The height of the tower is about	**80** m	**20** m	**160** m	**40** m
3.	The angle of projection for which the maximum height and the horizontal range of a projectile are equal is	45^0	60^0	$\tan^{-1}\left(\frac{1}{4}\right)$	$\tan^{-1}(4)$
4.	A rocket works on the principle of conservation of	Mass	Linear momentum	Energy	Angular momentum
5.	The area between the velocity and the time axis in the velocity time graph is numerically equal to the	Speed of the object	Acceleration of the object	Momentum of the object	Distance covered by the object
6.	Distance covered by a freely falling body in 2 s will be	$4 \bullet 9m$	$19 \bullet 6m$	$28m$	$10m$
7.	During the projectile motion, the horizontal component of velocity	Changes with time	Becomes zero	Remains constant	Increases with time
8.	Dimensions of impulse is similar to the dimensions of	Torque	Work	Force	Momentum
9.	The horizontal range of a moving projectile depends upon	Mass of projectile	Angle of projection	Initial velocity	Both (A) and (B)
10.	All objects in free fall near the surface of earth move towards the earth with	Uniform acceleration	Variable acceleration	No acceleration	Negative acceleration
11.	Distance travelled by a body falling freely from in **1st , 2nd** and **3rd** seconds are in the ratio	**1:4:9**	**1:3:5**	**1:2:3**	**1:2:5**

SUBJECTIVE TYPE

Total Marks: 18 **Time Allowed: 0 Hours 50 Minutes**

SECTION – I (SHORT QUESTIONS)

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

i. At what point or points in its path does a projectile have its minimum speed, its maximum speed?

ii. Explain the circumstances when velocity and acceleration are **(a)** parallel **(b)** perpendicular.

iii. Show that horizontal range are equal at 30^o and 60^o.

iv. Which will be more effective in knocking a bear down? a rubber bullet or a lead bullet of the same momentum.

v. Define impulse and show that how it is related to linear momentum?

vi. Prove that $t = \frac{2v_i Sin\theta}{g}$.

vii. Can the velocity of an object reverse the direction when acceleration is constant?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. What are elastic and inelastic collisions? Discuss the elastic collision in one dimension and prove that **Speed of approach = Speed of separation.** Also find the expression for velocity of incident and target particle before and after the collision. (5)

ii. A ball is thrown horizontally from a height of 10m with velocity of 21 ms^{-1}. How far off it hit the ground and with what velocity? (3)

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SECTION – III (Practical)

4. (a) Write answer of TWO questions. (2×2=4)

i. State conditions of equilibrium.

ii. What is torque? Give its dimensions.

iii. Define centre of gravity.

4. (b) Write procedure to verify second condition of equilibrium. (3)

4. (c) Answer the following questions on the basis of graph drawn between time period (T) **and extension** (x)**.** (4)

i. What you conclude from the graph?

ii. Find the acceleration due to gravity from the graph.

Good Luck

Ch. Khalid Mahmood Ashraf