AAFAQ ACADEMY – KASUR

Paper: Physics **Chapter (5)** **Class: F.Sc. Part – I**

CIRCULAR MOTION

Name: _____ Roll No: (in words) _____

MORNING 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.	The value of angular momentum is minimum when θ equal to	0^0	60^0	90^0	180^0
2.	Angular speed of minute's hand of clock in $rad \bullet \min^{-1}$ is	$\pi/60$	$\pi/20$	$\pi/30$	$\pi/40$
3.	The diver spin slower when moment of inertia becomes	Greater	Smaller	Remains constant	$Zero$
4.	An elevator is accelerated downward with acceleration a, the apparent weight of a body of mass m in it will be	$m(a-g)$	$m(a+g)$	$m(g-a)$	mg
5.	If Earth stop rotating, weight of the body on equator	Increases	Decreases	Remains same	None of these
6.	The axis of rotation of a rotating body in the absence of external torque	Continuously changes	Remains fixed in direction	In any direction	None of these
7.	The number of satellites included in the global positioning system	20	48	24	None of these
8.	Units of moment of inertia are	$kg \bullet m^2$	$J \bullet s^2$	$N \bullet m \bullet s^2$	All of these
9.	The mud flies of the tyre of a moving bicycle in the direction of	Towards the centre	Along the radius	Along the tangent	None of these
10.	Time period of circular motion is given by	$T = 2\pi/\omega$	$T = \omega/2\pi$	$T = 2\pi\omega$	All of these
11.	The direction of angular velocity of a body moving in a circle is	Away from the axis of rotation	Towards the axis of rotation	Along the axis of rotation	None of these

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. What is meant by moment of inertia? Explain its significance.

ii. What is meant by centripetal force and why it must be furnished to an object if the object to follow a circular path?

iii. What is meant by angular momentum? Explain the law of conservation of angular momentum.

iv. Show that orbital angular momentum is $L_0 = mvr$.

v. Prove that $a = r\alpha$.

vi. Explain why an object, orbiting the Earth, is said to be freely falling. Use your explanation to point out why objects appear weightless under certain circumstances?

vii. A disc and a hoop start moving down from the top of an inclined plane at the same time. Which one will be moving faster on reaching the bottom?

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. State and explain law of conservation of angular momentum in detail. (5)

ii. A body of moment of inertia $I = 0 \bullet 80 kg \bullet m^2$ about a fixed axis, rotates with constant angular velocity of $100 rad \bullet s^{-1}$. Calculate the angular momentum L and the torque to sustain this motion. (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