RIZWAN ACADEMY – KASUR

Paper: Physics **Chapter (5 – 6)** **Class: F.Sc. Part – I**

CIRCULAR MOTION + FLUID DYNAMICS

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.	Below the surface of Earth towards its centre the value of 'g'	Decreases	Increases	Remains constant	None of these
2.	Centripetal force performs	Maximum work	Minimum work	Negative work	Zero work
3.	The product of dimensions of moment of inertia and angular frequency gives the dimensions of	Torque	Angular momentum	Linear momentum	None of these
4.	The critical velocity of satellite orbiting close to earth is	$5 \bullet 9 km \bullet s^{-1}$	$6 \bullet 9 km \bullet s^{-1}$	$7 \bullet 9 km \bullet s^{-1}$	$8 \bullet 9 km \bullet s^{-1}$
5.	The ratio of the rotational K.E. of hoop and disc will be	$1/2$	$1/4$	2	4
6.	A stone tied to the end of a $20 cm$ long string is whirled in a horizontal circle. If the centripetal acceleration is $9 \bullet 8 m \bullet s^{-2}$, then the angular velocity in $rad \bullet s^{-1}$ is	$7/22$	7	22	21
7.	When a sphere rolls without slipping, the ratio of the translational K.E. and rotational K.E. will be	**1 : 1**	**2 : 1**	**1 : 7**	**5 : 1**
8.	Torque acting on a system is zero. Which of the following will be conserved?	Moment of inertia	Angular momentum	Moment of force	Energy
9.	Dimensions of $\left[\frac{1}{2}\rho v^2\right]$ are	$[M\ L^{-1}T^2]$	$[M\ L^3T^{-2}]$	$[M\ L^{-1}T^{-2}]$	$[M\ L^{-1}T^{-1}]$
10.	Which of the following has small coefficient of viscosity?	Mobil oil	Water	Honey	Thick tar
11.	Terminal velocity of a sphere of radius 'r' in a fluid of viscosity 'η' is	$mg/2\pi\eta r$	$mg/4\pi\eta r$	$mg/6\pi\eta r$	$6\pi mg\eta r$
12.	A piece of ice is floating in a jug containing water. When the ice melts	Remains same	Increases	Decreases	Rises and falls depending upon the mass of ice

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. Explain the working of a carburetor of a motor car using Bernoulli's principle.

ii. In an orbiting space station would the blood pressure in major arteries in the leg ever be greater than the blood pressure on major arteries in the neck.

iii. State Bernoulli's relation for a liquid in motion and describe some of its application?

iv. Why fog droplets appear to be suspended in air?

v. Explain why an object orbiting the earth is said to be freely falling. Use your explanation to point out why objects appear with weightless under certain circumstances.

vi. Describe what should be the minimum velocity, for a satellite, to orbit close to the Earth around it:

vii. State the direction of the following vectors in simple situations, angular momentum and angular velocity.

SECTION – II (ESSAY TYPE) Attempt given question

3. Do as directed...

i. Differentiate between real and apparent weight. Explain their relationship in detail. (5)

ii. An air plane wing is designed so that when the speed of air across the top of the wing is $450 m \bullet s^{-1}$, the speed of air below the wing is $410 m \bullet s^{-1}$. What is the pressure difference between the top and bottom of the wing? Density of air = $1 \bullet 29 kg \bullet m^{-3}$. (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