FULL –TEST QUESTION PAPER-JAN-2022

CLASS:XI **HOURS:3.00Hrs**

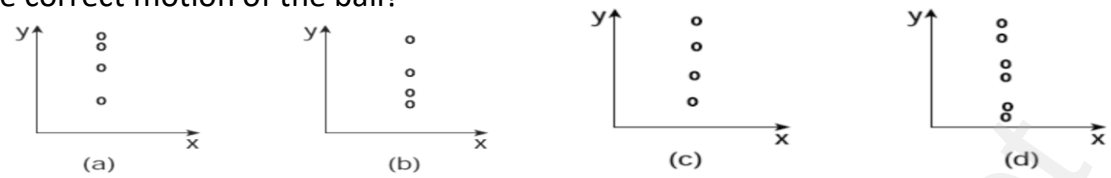
SUBJECT:PHYSICS **MARK:70**

I. Choose the correct answer **15x1=15**

1)If the error in the measurement of radius is 2%, then the error in the determination of volume of the sphere will be

a) 8% b) 2% c) 4% d) 6%

2)A ball is dropped from some height towards the ground. Which one of the following represents the correct motion of the ball?



3)If a particle executes uniform circular motion, choose the correct statement

(a) The velocity and speed are constant. (b) The acceleration and speed are constant.

(c) The velocity and acceleration are constant. (d) The speed and magnitude of acceleration are constant.

4)A bullet is fired from a rifle. If the rifle recoils freely, then the K.E. of the rifle is

a) Less than of the bullet b) Equal or less than that of the bullet

c) More than that of the bullet d) Same as that of the bullet

5)Moment of force is called

a) angular momentum b) torque c) couple d) none

6)When a mass is rotating in a plane about a fixed point, its angular momentum is directed along,

(a) a line perpendicular to the plane of rotation

(b) the line making an angle of 45° to the plane of rotation

(c) the radius (d) tangent to the path

7)The value of gravitational constant 'G' is experimentally determined by

a) cavendish b) tycho brahe c) nicholas d) none of these

8)An object of mass 10 kg is hanging on a spring scale which is attached to the roof of a lift. If the lift is in free fall, the reading in the spring scale is

(a) 98 N (b) zero (c) 49 N (d) 9.8 N

9)Copper of fixed volume V is drawn into a wire of length l. When this wire is subjected to a constant force F, the extension produced in the wire is Δl. If Y represents the Young's modulus, then which of the following graphs is a straight line?

(a) Δl versus V (b) Δl versus Y (c) Δl versus F (d) Δl versus $1/l$

10)A particle executing SHM crosses points A and B with the same velocity. Having taken 3 s in passing from A to B, it returns to B after another 3 s. The time period is

a) 15 s b) 6 s c) 12 s d) 9 s

11)If s_P and s_V denote the specific heats of nitrogen gas per unit mass at constant pressure and constant volume respectively, then

(a) $s_P - s_V = 28R$ (b) $s_P - s_V = R/28$ (c) $s_P - s_V = R/14$ (d) $s_P - s_V = R$

12)A sound wave whose frequency is 5000 Hz travels in air and then hits the water surface. Th e ratio of its wavelengths in water and air is

a) 4.30 b) 0.23 c) 5.30 d) 1.23

13)An air column in a pipe which is closed at one end, will be in resonance with the vibrating body of frequency 83Hz. Then the length of the air column is

a) 1.5 m (b) 0.5 m (c) 1.0 m (d) 2.0 m

14)The equation of state for adiabatic process is

a) $TV^{\gamma-1}$ = constant b) $T^{\gamma}P^{1-\gamma}$ = constant c) $PV^{\gamma-1}$ = constant d) both (a) and (b)

15)Two waves of lengths 50 cm and 51 cm produced 12 beats per second. The velocity of sound is

a) 340 m/s b) 331 m/s c) 306 m/s d) 360 m/s

II.Answer the any SIX questions[Q.No:24 is compulsory] **6x2=12**

16)Define a scalar. Give examples.
17)What is the difference between velocity and average velocity.
18)State triangular law of addition
19)What is the meaning by 'pseudo force'?
20)What are the applications of angle of repose?
21)What are the conditions in which force can not produce torque?
22)Which one of these is more elastic, steel or rubber? Why?
23)Why moon has no atmosphere?
24)If two objects of masses 2.5 kg and 100 kg experience the same force 5 N, what is the acceleration experienced by each of them?
25)Define intensity of sound and loudness of sound

III.Answer the any SIX questions[Q.No:33 is compulsory] **6x3=18**

26)What are the limitations of dimensional analysis?
27)Write down the kinematic equations for angular motion.
28)Using free body diagram, show that it is easy to pull an object than to push it.
29)Explain Coefficient of restitution(e)?
30)State Kepler's three laws.
31)State and prove parallel axis theorem.
32) Explain the variation of g with latitude.
33)A metal cube of side 0.20 m is subjected to a shearing force of 4000 N. The top surface is displaced through 0.50 cm with respect to the bottom. Calculate the shear modulus of elasticity of the metal.
34)Give the applications of elasticity.
35)Why there is no hydrogen in Earth's atmosphere?

III.Answer the ALL questions **5x5=25**

36)Write a note on triangulation method and radar method to measure larger distances.

OR

Discuss the properties of scalar and vector products.(Each 5 points)

37)a) What are concurrent forces? State Lami's theorem.
b) What is the role of air bag in a car?

OR

State and explain work-energy principle. Mention any three examples for it.

38)Derive the expression for moment of inertia of a rod about its center and perpendicular to the rod.

OR

Derive the time period of satellite orbiting the Earth.

39)State and prove Bernoulli's theorem for a flow of incompressible, non-viscous, and streamlined flow of fluid

OR

Derive the work done in an adiabatic process

40)Write down the postulates of kinetic theory of gases.

OR

Describe the vertical oscillations of a spring.

.....SMART WORK LEADS TO SUCCESS.....

Prepared by: J.Boopathi
PG Physics
-9788915768