11 - STD SECOND REVISION EXAM - 2023 PHYSICS

Time : 3.00 Marks : 70

PART - A

I. **Choose the correct answers.** 15 x 1 = 15

1) The work done by the Sun' s gravitational force on the Earth is
a) always zero b) always positive
c) can be positive or negative d) always negative

2) The dimension formula for strain is
a) $M^1L^{-1}T2$ b) $M^2L^2T^2$ c) $M^0L^0T^0$ d) $M^1L^1T^1$

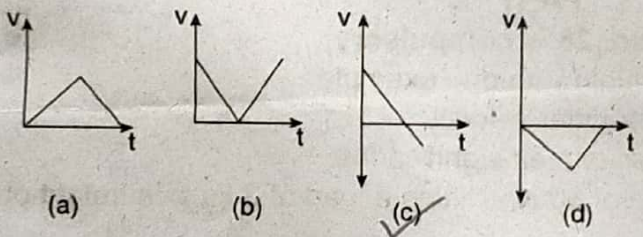
3) A sample of ideal gas is at equilibrium. Which of the following quantity is zero?
a) rms speed b) average speed c) average velocity d) most probable speed

4) If a person moving from pole to equator, the centrifugal force acting on him
a) increases b) decreases c) remains the same d) increases and then decreases

5) A 9 kg mass and 4 kg mass are moving with equal kinetic energies. The ratio of their momentum if
a) 1:1 b) 3:2 c) 2:3 d) 9:4

6) If a wire is stretched to double of its original length, then the strain in the wire is
a) 1 b) 2 c) 3 d) 4

7) A ball is projected vertically upwards with a velocity V. It comes back to ground in time t. Which v-t graph shows the motion correctly?



8) A constant retarding force of 50 N is applied to a body of mass 20 kg moving initially with a speed of 15 ms-1.Hpw long does the body takes to stop?
a) 0.75 s b) 1.33 s c) 6 s d) 35 s

9) In an isochoric process, we have
a) W=0 b) Q=0 c) $\Delta U=0$ d) $\Delta T=0$

10) The center of mass of a system of particles does not depend upon,
a) position of particles b) relative distance between particles
c) masses of particles d) force acting on particle

11) The damping force on an oscillator is directly proportional to the velocity. The unit of the constant of proportionality is
a) kg m s-1 b) kg m s-2 c) kg s-1 d) kg s

12) The speed of the center of a wheel rolling on a horizontal surface is V_0 , A point on the rim in level with the center will be moving at a speed of
a) zero b) V_0 c) $\sqrt{2}\,V_0$ d) $2\,V_0$

13) When you exercise in the morning by considering your body as thermodynamic system, which of the following is true?
a) $\Delta U>0$, $W>0$, b) $\Delta U<0$, $W>0$, c) $\Delta U<0$, $W<0$, d) $\Delta U=0$, $W>0$,

14) A body of mass 1 kg is thrown upwards with a velocity 20 ms-1. It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction?
a) 20 J b) 30 J c) 40 J d) 10 J

15) Which of the following options is correct

A	B
(1)Quantity	(A)Intensity
(2) Pitch	(B) Waveform
(3) Loudness	(C) Frequency

Options for 1,2 and 3 respectively are

a) B, C and A b) C, A and B c) A, B and C d) B, A

PART - B

II. Answers any Six questions.(Qn. No. 22 is compulsory) **6 x 2 = 12**

16) Find the dimensional formula of hC/G.

17) Write short notes on vector product between two vectors.

18) Using free body diagram, show that ir is easy to pull an object than to push it.

19) Define work.

20) What is the relation between torque and angular momentum?

21) Define gravitation potential energy.

22) A metal plate of area 2.5x10-4 m2 is placed on a 0.25 x10-3 m thick layer of castor oil. If a force of 2.5 N is needed to move the plate with a velocity 3x10-2 m s-1, calculate the coefficient of viscosity of castor oil.

23) What is the microscopic origin of pressure?

24) Define time period of simple harmonic motion.

PART - C

III. Answer any Six questions (Qn.No. 28 is compulsory) **6 x 3 = 18**

25) Define precision and accuracy. Explain with one example.

26) Define angular displacement and angular velocity.

27) State Newton' s three laws and discus their significance.

28) Calculate the work done by a force of 30 N in lifting a load of 2 kg to a height of 10 m. (g=10 ms-2)

29) What is the condition for pure rolling?

30) Discuss the important features of the law of gravitation.

31) Explain Stokes' s law.

32) In an adiabatic expansion of the air the volume is increased by 4%, what is percentage change in pressure?

33) Deduce Boyle' s law based on kinetic theory.

PART - D

IV. Answer all the questions. **5 x 5 = 25**

34) Explain in detail the various types of errors. (or)
Discuss in detail the energy in simple harmonic motion.

35) Explain in detail the triangle law of addition. **(or)**
Derive an expression for escape speed.

36) State the empirical laws of static and kinetic friction. **(or)**
Write down the postulates of kinetic theory of gases.

37) State and prove Bernoulli' s theorem for a flow of incompressible, non-viscous and streamlined flow of fluid.**(or)**
Describe Newton' s formula for velocity of sound waves in air and also discuss the Laplace' s correction.

38) State and prove parallel axis theorem. **(or)**
Derive Mayer' s relation for an ideal gas.