

RS - I

FIRST REVISION TEST - 2025

11 - STD

PHYSICS

Time : 3.00 Hrs

Marks : 70

- I. Choose the best answer:** **15 X 1 = 15**
- Round off the following number 19.95 into three significant figures.
a) 19.9 b) 20.0 c) 20.1 d) 19.5
 - If one object is dropped vertically downward and another object is thrown horizontally from the same height, then the ratio of vertical distance covered by both objects at any instant is
(a) 1 (b) 2 (c) 4 (d) 0.5
 - Two masses m_1 and m_2 are experiencing the same force where $m_1 < m_2$. The ratio of their acceleration a_1/a_2 is
a) 1 b) less than 1 c) greater than 1 d) all the three cases
 - A ball of mass 1 kg and another of mass 2 kg are dropped from a tall building whose height is 80 m. After, a fall of 40 m each towards Earth, their respective kinetic energies will be in the ratio of
(a) $\sqrt{2} : 1$ (b) $1 : \sqrt{2}$ (c) 2 : 1 (d) 1:2
 - The ratio of the acceleration for a solid sphere (mass m and radius R) rolling down an incline of angle θ without slipping and slipping down the incline without rolling is
(a) 5:7 (b) 2:3 (c) 2:5 (d) 7 : 5
 - The kinetic energy of the satellite orbiting around the earth is
a) equal to potential energy b) less than potential energy
c) greater than kinetic energy d) zero
 - The Young's modulus for a perfect rigid body is
a) 0 b) 1 c) 0.5 d) infinity
 - An ideal gas passes from one equilibrium state ($2P_1, 3V_1, T_2, N$) to another equilibrium state (P_1, V_1, T_1, N). Then
(a) $T_1 = T_2$ (b) $T_1 = \frac{T_2}{6}$ (c) $T_1 = 6T_2$ (d) $T_1 = 3T_2$
 - The graph between volume and temperature in Charles' law is
a) an ellipse b) a circle c) a straight line d) a parabola
 - 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) $s_p - s_v = \frac{R}{28}$ (c) $s_p - s_v = \frac{R}{14}$ (d) $s_p - s_v = R$
 - The damping force on an oscillator is directly proportional to the velocity. The units of the constant of proportionality are
(a) kg m s^{-1} (b) kg m s^{-2} (c) kg s^{-1} (d) kg s
 - Which of the following represents a wave
(a) $(x - vt)^3$ (b) $x(x + vt)$ (c) $\frac{1}{(x + vt)}$ (d) $\sin(x + vt)$

13. Find the initial velocity if $S = 3t^2 - 2t + 3$.
 (a) - 4 (b) 2 (c) - 2 (d) 4
14. The time period of polar satellite is
 (a) 100 s (b) 100 hr (c) 6000 s (d) 24 hr
15. If an object start from rest at height h, then the total energy is
 (a) U (b) U + KE (c) KE (d) zero.

II. Answer any six questions. Q.No. 24 is compulsory.

6 X 2 = 12

16. What are the uses of Dimensional analysis ?
17. Define time of flight .
18. State the law of conservation of energy .
19. A cyclist while negotiating a circular path with speed 20 m s^{-1} is found to bend an angle by 30° with vertical. What, is the radius of the circular path?
 (given, $g = 10 \text{ m s}^{-2}$)
20. Define poisson's ratio.
21. What is monoatomic molecule ? Give example .
22. What is resonance ?
23. Mention any two methods to reduce friction.
24. An ideal refrigerator keeps its content at 0°C while the room temperature is 27°C . Calculate its coefficient of performance.

III. Answer any six questions. Q.No. 33 is compulsory.

6 X 3 = 18

25. Define Precision and accuracy. Explain with one example .
26. Derive the equations of motion for a particle
 a) falling vertically b) projected vertically .
27. Describe the method of measuring angle of repose .
28. Write the difference between conservative and nonconservative force. Give two examples each.
29. State Kepler's three laws .
30. If excess pressure is balanced by a column of oil (with specific gravity 0.8) 4 mm high, where $R = 2.0 \text{ cm}$, find the surface tension of the soap bubble.
31. Explain any three types of equilibrium .
32. Derive the work done in isothermal process .
33. An oxygen molecule is travelling in air at 300 K and 1 atm, and the diameter of oxygen molecule is $1.2 \times 10^{-10} \text{ m}$. Calculate the mean free path of oxygen molecule.

IV. Answer all the questions:

5 X 5 = 25

34. Explain the propagation of errors in addition and multiplication. **(OR)**
 State and explain work energy principle.
35. Explain in detail the triangle law of addition. **(OR)**
 State and explain the law of equipartition of energy.
36. Explain the different types of modulus of elasticity . **(OR)**
 Derive an expression for escape speed .
37. Explain the horizontal oscillations of a Spring. **(OR)**
 Explain the need for banking of tracks.
38. Derive the expression for moment of inertia of a rod about it centre and perpendicular to the rod. **(OR)** Explain in detail Newton's law of cooling.