

SECOND MID TERM TEST - 2023

STD - XI

PHYSICS

TIME : 1.30 Hrs

YouTube/ Akwa Academy

MARKS : 35

PART - I

Choose the correct Answer.

10 x 1 = 10

- 1 mole of any ideal gas has volume Litre
a) 24.6 b) 141.4 c) 22.4 d) 21.46
- If the acceleration due to gravity becomes 4 times its original value, then escape speed.
a) remains same b) 2 times of original value
c) becomes halved d) 4 times of original value
- If the mass and radius of the Earth are both doubled, then the acceleration due to gravity "g"
a) remains same b) $g/2$ c) $2g$ d) $4g$
- The Kinetic energy of the satellite orbiting around the Earth is
a) is equal to potential energy b) less than potential energy
c) greater than kinetic energy d) zero
- Which of the following is a vector ?
a) viscosity b) surface tension c) pressure d) stress
- The Young's modulus for a perfect rigid body is
a) 0 b) 1 c) 0.5 d) infinity
- The wettability of a surface by a liquid depends primarily on
a) viscosity b) surface tension
c) density d) angle of contact between the surface and the liquid
- An ideal gas passes from one equilibrium state (P_1, V_1, T_1, N) to another equilibrium state ($2P_1, 3V_1, T_2, N$) then
a) $T_1 \equiv T_2$ b) $T_2 \equiv T_1 / 6$ c) $T_1 = 6T_2$ d) $T_1 = 3T_2$
- When a uniform rod is heated, which of the following quantity of the rod will increase
a) mass b) weight c) center of mass d) moment of inertia
- In an isochoric process, we have
a) $W = 0$ b) $Q = 0$ c) $\Delta U = 0$ d) $\Delta T = 0$

PART - II

Answer any three Questions. Q.No.15 is compulsory

3 x 2 = 6

11. Define the gravitational field. Give its unit.
12. Where is there no lunar eclips and solar eclipse every month?
13. Define Poission's ratio.

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14. Define co-efficient of viscosity of a liquid.
15. Two pistons of a hydraulic lift have diameters of 60cm and 5 cm. What is the force exerted by the larger piston when 50N is placed on the smaller piston?
16. What is Wien's law?

PART - III**Answer any three Questions. Q.No. 22 is compulsory****3 x 3 = 9**

17. Explain the variation of g with altitude.
18. Derive an expression for energy of satellites.
19. What is Reynold's number? Give its significance.
20. What are the factors affecting the surface tension of a liquid.
21. What is meant by a reversible and irreversible processes.
22. There are two cannot engines A and B operating in two different temperature regions for engine A the temperatures of the two reservoirs are 150°C and 100°C . For engine B the temperatures of the reservoirs are 350°C and 300°C . Which engine has lesser efficiency.

PART - IV**Answer all the Questions.****2 x 5 = 10**

23. a) Derive an expression for escape speed

(OR)

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

24. Derive Mayer's relation for an ideal gas.

(OR)

Explain in detail Newton's law of cooling.