

Ts11P

Tenkasi District
First Mid Term Test - 2023



08-08-2023

Standard 11

PHYSICS

Time: 1.30 Hours

Marks: 35

PART - A

I. Choose the correct answer.

10×1=10

- 1) If $\pi = 3.14$, then the value of π^2 is
 a) 9.8596 b) 9.860 c) 9.86 d) 9.9
- 2) If the length and time period of an oscillating pendulum have errors of 1% and 3% respectively then the error in measurement of acceleration due to gravity is
 a) 4% b) 5% c) 6% d) 7%
- 3) The dimension of $(\mu_0 \epsilon_0)^{-1/2}$ is
 a) length b) time c) velocity d) force
- 4) The density of a cube is measured by measuring its mass and length of its side. If the maximum error in the measurement of mass and length are 5% and 3% respectively, the maximum error in the measurement of density is
 a) 9% b) 8% c) 14% d) 2%
- 5) A Length - Scale (l) depends on the permittivity (ϵ) of a dielectric material, Boltzmann constant (K_B), the absolute temperature (T), the number per unit volume (n) of certain charged particles, and the charge (q) carried by each of the particles. Which of the following expression for l is dimensionally correct?

a) $l = \sqrt{\frac{nq^2}{\epsilon K_B T}}$ b) $l = \sqrt{\frac{\epsilon K_B T}{nq^2}}$ c) $l = \sqrt{\frac{q^2}{\epsilon n^{2/3} K_B T}}$ d) $l = \sqrt{\frac{q^2}{\epsilon n K_B T}}$

- 6) Which one of the following physical quantities cannot be represented by a scalar?
 a) Mass b) Length
 c) Momentum d) Magnitude of acceleration
- 7) If an object is thrown vertically up with the initial speed u from the ground, then the time taken by the object to return back to ground is

a) $\frac{u^2}{2g}$ b) $\frac{u^2}{g}$ c) $\frac{u}{2g}$ d) $\frac{2u}{g}$

- 8) Two objects are projected at angles 30° and 60° respectively with respect to the horizontal direction. The range of two object are denoted as R_{30° and

R_{60° . Choose the correct relation from the following.

a) $R_{30^\circ} = R_{60^\circ}$ b) $R_{30^\circ} = 4R_{60^\circ}$ c) $R_{30^\circ} = \frac{R_{60^\circ}}{2}$ d) $R_{30^\circ} = 2R_{60^\circ}$

- 9) The unit vector in the direction of $\vec{A} = \hat{i} + \hat{j} + \hat{k}$ is

a) $\hat{i} + \hat{j} + \hat{k}$ b) $\frac{\hat{i} + \hat{j} + \hat{k}}{\sqrt{2}}$ c) $\frac{\hat{i} + \hat{j} + \hat{k}}{\sqrt{3}}$ d) $\frac{\hat{i} + \hat{j} + \hat{k}}{\sqrt{6}}$

- 10) If a particle has negative velocity and negative acceleration, its speed
 a) increase b) decrease c) remains same d) Zero

Kindly send me your study materials to padasalai.net@gmail.com

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PART - B

II. Answer any three questions. Question no. 11 is compulsory. 3×2=6

- 11) Check the correctness of the equation $\frac{1}{2}mv^2 = mgh$ using dimensional analysis method.
- 12) What are the advantages of SI system?
- 13) Distinguish between scalar and vector quantity.
- 14) Define projectile.
- 15) Write the Kinematic equation for angular motion.

PART - C

III. Answer any three questions. Question no. 18 is compulsory. 3×3=9

- 16) Write a note on triangle method for measure larger distances.
- 17) What are the limitations of Dimensional Analysis?
- 18) In the cricket game, a batsman strikes the ball such that it moves with the speed 30ms^{-1} at an angle 30° with the horizontal. The boundary line of the cricket ground is located at a distance of 75m from the batsman? Will the ball go for a six? (Neglect the air resistance and take $g = 10 \text{ms}^{-2}$)
- 19) Write any six properties of scalar product.
- 20) Deduce the Relation between linear velocity and angular velocity.

PART - D

IV. Answer in detail.

2×5=10

- 21) Write the rules for determining significant figures.

(OR)

Obtain an expression for the time period T of a simple pendulum. The time period T depends on (i) mass (m) of the bob (ii) length (l) of the pendulum (iii) acceleration due to gravity g at the place where the pendulum is suspended ($K = 2\pi$).

- 22) State and Explain Triangle law of vector Addition.

(OR)

Write the equation of uniformly accelerated motion by calculus method.
