

Cuddalore - Dt

A COMMON FIRST MID TERM TEST - 2023**Standard - XI
PHYSICS**Reg.No.

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Marks: 50**Time: 1.30 hrs.****PART - I****Answer all the questions.****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 error in the measurement of radius is 2% then the error in the determination of volume of the sphere _____.
a) 8% b) 2% c) 4% d) 6%
3. Round of the following number 19.95 into three significant figures
a) 19.9 b) 20.0 c) 20.1 d) 19.5
4. The dimensional formula for gravitational constant G is _____.
a) ML^3T^{-2} b) $M^{-1}L^3T^{-2}$ c) $M^{-1}L^{-3}T^{-2}$ d) $ML^{-3}T^2$
5. If the particle has negative velocity and negative acceleration its speed _____.
a) increases b) decreases c) remains same d) Zero
6. If a particle executes uniform circular motion in the XY plane in clock wise direction, then the angular velocity is in _____.
a) +y direction b) +z direction c) -z direction d) -x direction
7. If the velocity is $\vec{v} = 2\hat{i} + t^2\hat{j} - 9\hat{k}$ then the magnitude of acceleration at $t = 0.53$ is _____.
a) 1 ms^{-2} b) 2 ms^{-2} c) zero d) -1 ms^{-2}
8. If an object is thrown vertically up with the initial speed is from the ground, then the time taken by the object is return back to ground is _____.
a) $\frac{u^2}{2g}$ b) $\frac{u^2}{g}$ c) $\frac{u}{2g}$ d) $\frac{2u}{g}$
9. Which one of the following physical quantities cannot be represented by a scalar?
a) Mass b) Length
c) Momentum d) Magnitude of acceleration
10. When a car takes a sudden left turn in the curved road, passengers are pushed towards the right due to _____.
a) inertia of direction b) inertia of motion
c) inertia of rest d) absence of inertia

PART - II**Note : i) Answer any 5 of the following questions.****ii) Question No. 14 is compulsory.****5×2=10**

11. What are the uses of dimensional analysis?
12. Explain the principle of homogeneity of dimensions. Give example.

13. Briefly explain the types of physical quantities.
14. From a point on the ground, the top of a tree is seen to have an angle of elevation 60° . The distance between the tree and a point is 50m. Calculate the height of the tree?
15. Define a Scalar. Give examples.
16. What is meant by Projectile? Give an example.
17. Define acceleration. Give its unit.
18. Define one newton.

PART - III

Note : i) Answer any 5 of the following.

ii) Question No. 21 is compulsory.

5×3=15

19. What are the limitations of dimensional analysis?
20. Write any three rules for determining significant figures.
21. Two vectors are given as $\vec{r} = 2\hat{i} + 3\hat{j} + 5\hat{k}$ and $\vec{F} = 3\hat{i} - 2\hat{j} + 4\hat{k}$. Find the resultant vector $\vec{r} = \vec{r} \times \vec{F}$.
22. What are Gross Errors? How it can be minimised?
23. Define displacement and distance.
24. Write down the Kinematic equations for angular motion.
25. What is the difference between velocity and average velocity.
26. What is an inertia? Give the types of inertia?

PART - IV

Note : i) Answer all the questions:

3×5=15

27. a) 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. and (iii) acceleration due to gravity g at the place where the pendulum is suspended. (constant $k = 2\pi$).

(OR)

- b) Write a note on triangulation method and radar method to measure larger distances.
 28. a) Explain in detail the triangle law of addition.
- (OR)**
- b) What is meant by Scalar product? Discuss the properties of Scalar product.
 29. a) Derive the Kinematic equations of motion for constant acceleration.
- (OR)**
- b) State the Newton's laws of motion.