

FIRST MID TERM TEST - JULY - 2019

THIRUNELVELI STANDARD - XI DISTRICT PHYSICS

Time : 1-15 hours

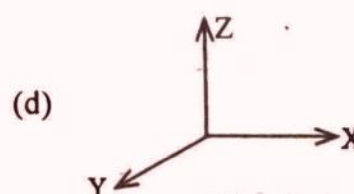
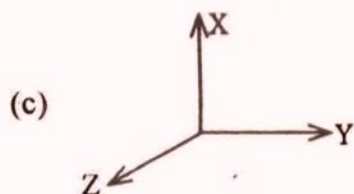
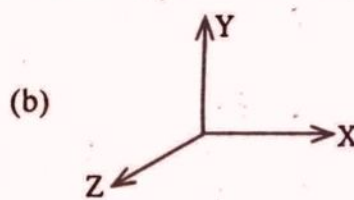
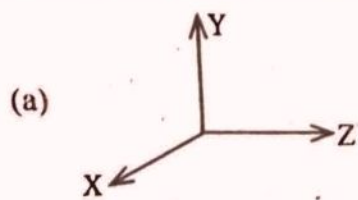
Marks - 35

PART - A

I. Choose the correct answer:

10 × 1 = 10

- Light year is the unit of
 (a) velocity (b) time (c) intensity of light (d) distance
- The radius of a ball is (5.4 ± 0.2) cm. The percentage error in the volume of the ball is
 (a) 11% (b) 4% (c) 7% (d) 9%
- 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) $[ML^{-3}T^{-2}]$
- The dimension formula for $\frac{1}{\sqrt{\mu_0 \epsilon}}$ is
 (a) [L] (b) [T] (c) $[LT^{-1}]$ (d) $[MLT^{-2}]$
- Which one of the following Cartesian Co-ordinate systems is followed in physics?



- If the velocity is $\mathbf{v} = 2\hat{i} + t^2\hat{j} - 9\hat{k}$ then the magnitude of acceleration at $t = 0.5$ s is
 (a) 1ms^{-2} (b) 2ms^{-2} (c) zero (d) -1ms^{-2}
- If a particle executes uniform circular motion, choose the correct statement.
 (a) The speed and magnitude of acceleration are constant
 (b) The acceleration and speed are constant
 (c) The velocity and acceleration are constant
 (d) The velocity and magnitude of speed are constant
- An object is dropped in an unknown planet from height 50 m. It reaches the ground in 2 s. The acceleration due to gravity in this unknown planet is
 (a) $g = 20\text{ms}^{-2}$ (b) $g = 25\text{ms}^{-2}$ (c) $g = 15\text{ms}^{-2}$ (d) $g = 30\text{ms}^{-2}$
- If $|\vec{A} + \vec{B}| = |\vec{A} - \vec{B}|$ then the angle between \vec{A} and \vec{B} is
 (a) 90° (b) 45° (c) 60° (d) 30°
- A body is thrown with a velocity of 9.8 ms^{-1} making an angle of 30° with the horizontal. It will hit the ground after a time
 (a) 3.0 s (b) 2.0 s (c) 1.5 s (d) 1 s

PART - B

II. Answer ANY THREE of the following. Answer Question No.13 compulsory: $3 \times 2 = 6$

11. How will you minimize the following errors?
a) Random error b) Systematic error
12. How will you measure the diameter of the moon using parallax method
13. A train was moving at the rate of 54 km h^{-1} when brakes were applied. It came to rest within a distance of 225 m. Calculate the retardation produced in the train.
14. Explain what is meant by Cartesian Co - ordinate system.
15. If an object is thrown horizontally with an initial speed 10 ms^{-1} from the top of a building of height 100 m. What is the horizontal distance covered by the particle?

PART - C

III. Answer ANY THREE of the following. Answer Question No.19 compulsory: $3 \times 3 = 9$

16. Derive the Kinematic equation of motion for constant acceleration.
17. Explain in detail the triangle law of addition.
18. Write the rules for rounding off figures.
19. Assuming that the frequency (γ) of a vibrating string may depend on i) applied force (F)
(ii) length (ℓ) iii) mass per unit length (m), prove that $\gamma \propto \frac{1}{\ell} \sqrt{\frac{F}{M}}$ using dimensional analysis.
20. Why is it convenient to express the distance of stars in terms of light year or parsec rather than in km?

PART - D

IV. Answer ALL questions:

$2 \times 5 = 10$

- 21.a) Explain the principle of homogeneity of dimensions. What are its uses? Give example. (3)
- b) Write a note on radar method to measure large distances. (2)

(OR)

Derive the equation of motion range and maximum height reached by the particle thrown at an oblique angle 'Q' with respect to the horizontal direction.

22. Obtain the expression for total acceleration in the non-uniform circular motion.

(OR)

- (a) Write the rules for determining significant figures. (3)
- (b) The radius of the circle is 3.12 m. Calculate the area of the circle with regard to significant figures.

SIVAKUMAR. M. Sri Rammatric (TSS)
Vallam - 627 809.