# Tenkasi District Common Examinations



### Common First Mid Term Test - 2022

Time: 1.30 Hrs.

## Standard 11 **PHYSICS**

Marks: 35

Part - A

Answer ALL the questions:		
1) If the		

10×1=10

	the que	suons;					
1)	If the error in	If the error in measurement of radius is 2%, then the error in the determination					
		the sphere will be					
	a) 8%	b) 2%	c) 4%	d) 6%			
2)	The Velocity of a particle V at any instant is given by $V = at+bt^2$						

- a) L b) LT-1 3) The dimension  $(\mu_0 \epsilon_0)^{-1/2}$  is
  - a) length

b) time

c) LT-2

c) velocity

- d) force
- 4) Which of the following pair have same dimentions?
  - a) Force and Pressure

- b) Stress and Strain
- c) Momentum and Impulse
- d) Work and Pressure
- Identify the unit vector in the following
  - a)  $\hat{i} + \hat{j}$
- b)  $\frac{\hat{i}}{\sqrt{2}}$  c)  $\hat{k} \frac{\hat{j}}{\sqrt{2}}$  d)  $\frac{\hat{i} + \hat{j}}{\sqrt{2}}$

d) LT-3

- 6) If the velocity is  $\vec{v} = 2\hat{i} + t^2\hat{j} 9\hat{k}$ , then the magniture of acceleration at t = 0.5 second is
  - a)  $1 \text{ ms}^{-2}$
- b) 2 ms<sup>-2</sup>
- c) zero
- d)  $-1 \text{ ms}^{-2}$
- 7) Which of the following is example for scalar product?
  - a) Torque

b) Workdone

c) Liner Velocity

- d) Angular momentum
- 8) If an object is thrown vertically up with initial speed u from the ground, then the time taken by the object to return back to ground is
  - a)  $\frac{u^2}{2a}$
- b)  $\frac{u^2}{a}$
- c)  $\frac{u}{2a}$
- d)  $\frac{2u}{a}$
- 9) Two massess  $m_1$  and  $m_2$  are experiencing the same force when  $m_1 < m_2$ . The ratio of their acceleration  $a_1/a_2$  is
  - a) 1

b) less than 1

c) greater than 1

- d) all the above
- 10) If a person moving from pole to equator, the centrifugal force acting on him.
  - a) increase

b) decreases

c) remains the same

d) increases and then decreases

#### Part - B

# Answer any 3 questions. Question No. 14 is compulsory:

3×2=6

- 11) What is the principle of homogeneity of dimensions?
- 12) What is relative velocity?
- 13) State Newton's Second Law.
- Distinguish fundamental quantity and derived quantity.
- 15) What is vector product? Give example.

#### Part - C

# Answer any 3 questions. Question No. 19 is compulsory:

3×3=9

- 16) How will you measure height of the tree using triangulation method?
- 17) Explain cross error and how will you minimize it?
- 18) Deduce the relation between linear velocity and angular velocity.
- 19) 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 resultornt  $\vec{\tau} = \vec{r} \times \vec{F}$ .
- 20) Define angle of friction. Deduce the relation between coefficient of static friction and angle of friction.

### Part - D

### Answer all questions:

 $2 \times 5 = 10$ 

- 21) a) Convert 76 cm of mercury pressure into Nm<sup>-2</sup> using the method of dimension. (OR)
  - b) Deduce the expression for magnitude and direction of resultant vector of addition using triangular law.
- 22) a) Drive the kinematics equations of motion for constant acceleration.

### (OR)

b) Compare static friction and kinetic friction.