## Tripura JEE 2025 Question Paper (Sample)

### Physics:

- MCQ:
- 1. A particle moves in a circular path with constant speed. Which of the following statements is true?
- (a) The velocity of the particle is constant.
- (b) The acceleration of the particle is constant.
- (c) The magnitude of the acceleration is constant.
- (d) The kinetic energy of the particle is not constant.
  - 2. The temperature of an ideal gas is increased from 27°C to 127°C. The percentage increase in the root mean square velocity of the molecules is:
- (a) 15%
- (b) 17.4%
- (c) 20%
- (d) 25%
  - 3. A car is moving with a constant velocity. Which of the following is true?
- (a) Its acceleration is non-zero.
- (b) Its acceleration is zero.
- (c) Its displacement is zero.
- (d) Its speed is changing.
  - 4. The focal length of a convex lens is 20 cm. What is its power?
- (a) 2 diopters
- (b) 5 diopters
- (c) 0.2 diopters
- (d) 0.5 diopters
  - 5. In a simple harmonic motion, the acceleration is proportional to:
- (a) Displacement
- (b) Velocity
- (c) Time period

(d) Frequency

7. The magnetic field lines inside a long solenoid carrying current are:

- (a) Circular
- (b) Parallel to the axis
- (c) Perpendicular to the axis
- (d) Elliptical

8. The phenomenon of light bending around obstacles is known as:

- (a) Reflection
- (b) Refraction
- (c) Diffraction
- (d) Interference

9. The SI unit of magnetic flux is:

- (a) Tesla
- (b) Weber
- (c) Henry
- (d) Ampere

10. A particle is executing simple harmonic motion. At the mean position, which of the following

- is the maximum?
- (a) Potential energy
- (b) Kinetic energy
- (c) Acceleration
- (d) Displacement

11. Which of the following electromagnetic waves has the highest frequency?

- (a) Radio waves
- (b) Microwaves
- (c) X-rays
- (d) Visible light
- 12. What is the SI unit of power of a lens?
- (a) Meter
- (b) Diopter
- (c) Watt
- (d) Joule

13. A body is moving in a uniform circular motion. Which of the following is constant?

- (a) Velocity
- (b) Acceleration
- (c) Speed
- (d) Momentum

14. What is the value of the gravitational acceleration on the surface of the earth approximately?

- (a) 10 m/s<sup>2</sup>
- (b) 5 m/s<sup>2</sup>
- (c) 20 m/s<sup>2</sup>
- (d) 1 m/s<sup>2</sup>
  - Numerical Value:
  - 1. A force of 20 N acts on a body of mass 5 kg. Calculate the acceleration produced in the body (in m/s<sup>2</sup>).
  - 2. Two resistors of 4 ohms and 8 ohms are connected in parallel. what is the equivalent resistance?
  - 3. If a body of mass 10kg has a velocity of 5m/s, calculate its kinetic energy (in Joules).
  - A car accelerates from rest to a velocity of 20 m/s in 5 seconds. Calculate the acceleration (in m/s<sup>2</sup>).
  - 5. A body with a mass of 2 kg is lifted 5 meters vertically. Calculate the potential energy gained (in Joules). (Assume  $g = 10 \text{ m/s}^2$ )

#### Chemistry:

- MCQ:
- 1. Which of the following is an example of an acidic oxide?
- (a) Na₂O
- (b) MgO
- (C) CO<sub>2</sub>
- (d) CaO

2. The IUPAC name of CH<sub>3</sub>CH(OH)CH<sub>3</sub> is:

- (a) Propanol
- (b) 2-Propanol
- (c) 1-Propanal
- (d) Propanoic acid

3. Which of the following elements has the highest electronegativity?

(a) Sodium (Na)

- (b) Chlorine (Cl)
- (c) Potassium (K)
- (d) Magnesium (Mg)

4. Which of the following is an example of a saturated hydrocarbon?

- (a) Ethene
- (b) Ethyne
- (c) Methane
- (d) Benzene
- 5. Which of the following is an alkaline earth metal
- (a) Sodium (Na)
- (b) Potassium (K)
- (c) Calcium (Ca)
- (d) Aluminum (AI)
- 6. The process of heating a concentrated ore in the absence of air is called:
- (a) Roasting
- (b) Calcination
- (c) Smelting
- (d) Leaching
- 7. Which of the following is a noble gas?
- (a) Oxygen (O)
- (b) Nitrogen (N)
- (c) Argon (Ar)
- (d) Hydrogen (H)

8. The process of converting sugar into alcohol is called:

- (a) Oxidation
- (b) Reduction
- (c) Fermentation
- (d) Polymerization

9. Which of the following is an example of a basic oxide?

- (a) SO<sub>2</sub>
- (b) NO<sub>2</sub>
- (c) CaO
- (d) P<sub>2</sub>O<sub>5</sub>

10. Which of the following is an example of an alkene?

- (a) Methane
- (b) Ethane
- (c) Ethene
- (d) Ethyne

11. What is the process of separating a solute from a solution by crystallization?

- (a) Distillation
- (b) Filtration
- (c) Crystallization
- (d) Sublimation

12. Which of the following elements belongs to the halogen group?

- (a) Sodium
- (b) Potassium
- (c) Chlorine
- (d) Calcium

13. What is the chemical formula of baking soda?

- (a) NaOH
- (b) Na<sub>2</sub>CO<sub>3</sub>
- (c) NaHCO<sub>3</sub>
- (d) Ca(OH)<sub>2</sub>
  - Numerical Value:
  - 1. What is the pH of a 0.001 M solution of HCI?
  - 2. How many moles are in 22 grams of CO2?
  - 3. If you have 1 mole of NaCl, how many grams do you have? (Given: Na = 23, Cl = 35.5)
  - What is the molarity of a solution containing 40g of NaOH in 1 litre of water? (Given: Na=23, O=16, H=1)
  - 5. If you have 2 moles of water (H<sub>2</sub>O), how many grams do you have? (Given: H=1, O=16)

#### Mathematics:

- MCQ:
- 1. If  $\sin \theta = 4/5$ , then  $\cos \theta$  is equal to:
- (a) 3/5
- (b) 5/3
- (c) 4/3
- (d) 3/4
  - 2. The derivative of  $e^{(2x)}$  with respect to x is:
- (a) e^(2x)
- (b) 2e^(2x)
- (c) e^x
- (d) 2e^x
  - 3. The value of  $tan(\pi/4)$  is:
- (a) 0
- (b) 1
- (c) √3
- (d) 1/√3

(a) 3x (b) x²

4. What is the derivative of x3?

(c) 3x<sup>2</sup> (d) x<sup>₄</sup>/4

5. The equation of a straight line passing through the origin is:

(a) y = mx + c (b) y = mx (c) x = c (d) y = c

6. The value of  $cos(\pi/2)$  is:

(a) 0

(b) 1

(c) -1

(d) ∞

7. The slope of a line perpendicular to y = 2x + 3 is:

- (a) 2
- (b) -2
- (c) 1/2
- (d) -1/2

8. The value of  $sin(\pi)$  is:

- (a) 0
- (b) 1
- (c) -1
- (d) ∞

9. What is the value of sin(0)?

- (a) 0
- (b) 1
- (c) -1 (d) undefined
- 10. What is the formula for the volume of a sphere

- (a) πr²h
- (b) 4/3πr<sup>3</sup>
- (C) πr<sup>2</sup>
- (d) 2πrh
- 11. If  $f(x) = x^2$ , then f'(x) is equal to:
- (a) 1
- (b) 2x
- (c) x
- (d) x³

12. What is the distance between the points (1, 2) and (4, 6)?

- (a) 3
- (b) 4
- (c) 5
- (d) 6

13. What is the value of  $log_{10}(1000)$ ?

- (a) 1
- (b) 2
- (c) 3
- (d) 4
  - Numerical Value:
  - 1. If  $log_2(x) = 3$ , then x = ?
  - 2. Calculate the area of a circle with a radius of 7cm.
  - 3. If the diameter of a circle is 10 cm, what is its circumference (in cm)?
  - 4. What is the determinant of the matrix [[1, 2], [3, 4]]?
  - 5. If the area of a square is 64 cm<sup>2</sup>, what is the length of its side (in cm)?
  - 6. What is the value of the integral of 2x dx?
  - 7. If the volume of a cube is 27 cm<sup>3</sup>, what is the length of its edge (in cm)?
  - 8. What is the value of the limit of (sin x)/x as x approaches 0?

# CollegeDekho