

Ts-12P

Tenkasi District Common Examinations
Common First Mid Term Test - 2022

**Standard 12**

Time: 1.30 Hrs.

PHYSICS

Marks: 35

Part - A**Answer ALL the questions:****10 × 1 = 10**

- 1) An electric field $E = 10x\hat{i}$ exists in a certain region of space. Then the potential difference $V = V_0 - V_A$. Where V_0 is the potential at the origin and V_A is the potential $x = 2\text{m}$ is
 a) 10V b) -20V c) +20V d) -10V
- 2) Two point A and B are maintained at a potential of 7V and -4V respectively. The workdone on moving 50 electrons from A to B is
 a) $8.80 \times 10^{-17} \text{ J}$ b) $-8.80 \times 10^{-17} \text{ J}$
 c) $4.40 \times 10^{-17} \text{ J}$ d) $5.80 \times 10^{-17} \text{ J}$
- 3) In Joule's law, when R and t are constant if the H is taken along the Y axis I^2 along the X-axis, the graph is
 a) Straight line b) Parabola c) Circle d) Ellipse
- 4) Two wires of A and B with circular cross section are made up of the same material with equal lengths. Suppose $R_A = 3R_B$, then what is the ratio of radius of wire A to that of B.
 a) 3 b) $\sqrt{3}$ c) $\frac{1}{\sqrt{3}}$ d) $\frac{1}{3}$
- 5) Which of the following is the example for positive Thomson effect?
 a) Ni b) CO c) Cu d) Hg
- 6) A circular coil of radius 5 cm and 50 turns carries a current of 3 ampere. The magnetic dipole moment of the coil is
 a) 1.0A m^2 b) 1.2A m^2 c) 0.5A m^2 d) 0.8A m^2
- 7) The vertical component of Earth magnetic field at a place is equal to horizontal component. What is the value of angle of dip at this place?
 a) 30° b) 45° c) 60° d) 90°
- 8) The potential energy of magnetic dipole whose dipole moment is $P = (-0.5\hat{i} + 0.4\hat{j}) \text{ Am}^2$ kept in uniform magnetic field $B = 0.2\hat{i} \text{ T}$
 a) -0.1 J b) -0.8 J c) 0.1 J d) 0.8 J
- 9) The charge of the capacitor is doubled the capacitance will be
 a) Doubled b) Halved
 c) Increased by four times d) Unchanged
- 10) Electric field E is
 a) Positive gradient of potential b) Positive gradient of velocity
 c) Negative gradient of potential d) Negative gradient of electrostatic force

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Part - B

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

3×2=6

- 11) What is Corona discharge?
- 12) State Kirchoff's first law.
- 13) Define mobility. Give its unit.
- 14) During lighting sitting inside a car is safer than standing under the tree. Why?
- 15) How is a galvanometer converted into ammeter?

Part - C

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

3×3=9

- 16) Deduce the expression for energy stored in the capacitor.
- 17) Deduce the expression for electrostatic potential at a point due to point charge.
- 18) Explain the determination of internal resistance of a cell using voltmeter.
- 19) Two resistors when connected series and parallel, their equivalent resistances are 15Ω and $\frac{56}{15}\Omega$ respectively. Find the values of resistances.
- 20) What are the properties of dia magnetic materials.

Part - D

Answer all questions:

2×5=10

- 21) a) Explain principle Construction and working of Vande Graff generator.

(OR)

- b) Deduce a relation for the magnetic field at a point due to an finitely long straight conductor carrying current.

- 22) a) Obtain the condition for bridge balance in wheatstone's bridge.

(OR)

- b) Deduce a relation for the electric field due to a dipole on its equatorial plane.

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