Class : 12

Register Number | 1 | 2 | B | 0 | 2 |

UNIT TEST - 1, JULY - 2024

PHYSICS

Time Allowed : 1.30 Hours] [Max. Marks : 35

PART – I

Choose the correct Answer. **5x1=5**

1. Which charge configuration produces a uniform Electric Field?

   (a) Point charge (b) Uniformly charged infinite line

   (c) Uniformly charged infinite plane (d) Uniformly charged spherical shell

2. A Capacitor of 50μF is charged to 10 volts Its energy in Joules is

   (a) 2.5×10^{-3} (b) 5×10^{-3} (c) 10×10^{-4} (d) 2.5×10^{-4}

3. A Internal resistance of a 2.1 V cell which gives a current of 0.2 A through a resistance of 10 Ω is

   (a) 0.2 Ω (b) 0.5 Ω (c) 0.8 Ω (d) 1.0 Ω

4. n equal resistors are first connected in series and then in parallel. The ratio of the equivalent resistance in two case is

   (a) n (b) $\frac{1}{n^2}$ (c) n^2 (d) $\frac{1}{n}$

5. The vertical component of Earth's magnetic field at a place is equal to the horizontal component What is the value of Angle of dip at this place?

   (a) 30° (b) 45° (c) 60° (d) 90°

PART - II

Answer any Three questions and Question number 10 is compulsory. **3x2=6**

6. What is an Equipotential Surface?
7. State : Gauss Law.
8. Define Temperature Coefficient of resistance.
9. State Fleming's Left Hand rule.
10. Find the heat energy produced in a resistance of 10 Ω when 5 A current flow through it for 5 minutes.

PART- III

Answer any three questions and question No. 15 is compulsory. 3x3=9

11. Derive an expression for Electric Potential due to a point charge

12. Discuss the conversion of Galvanometer into an Ammeter.

13. Explain Cells in Series.

14. State Kirchhoff's Junction rule and Loop rule.

15. A parallel plate Capacitor has square plate of side 5 Cm and separated by a distance of 1 mm.Calculate the Capacitance of this capacitor.

PART - IV

Answer all the questions. 3x5=15

16. a) Explain in detail the Construction and Working of a Van de Graff Generator.

(OR)

b) Explain in detail the effect of Dielectric placed in a parallel plate capacitor, When the capacitor is disconnected from the battery.

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

(OR)

b) Describe the Microscopic model of current and Obtain Microscopic form of Ohm's law.

18. a) Discuss the Working of Cyclotron in detail.

(OR)

b) Derive the expression for the force on a current - carrying Conductor in a Magnetic Field.