

## MONTHLY TEST - JULY 2022

Standard - XII

Reg No.

120319

PHYSICS

Marks: 35

Time: 1.30 hrs.

PART - A

Prakash  
Kumar

5 × 1 = 5

Answer all the questions:

- Two points A and B maintained at a potential of 7v and -4v respectively. The workdone in 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)  $5.80 \times 10^{-17} \text{ J}$  BB
- If Voltage applied on a capacitor is increased from v to 2v. Choose the correct conclusion  
a) Q remains the same. C is doubled b) Q is doubled C is doubled  
c) C remains same Q doubled d) Both Q and C remains same BB
- The internal resistance of a 2.1v cell which gives a current of 0.2A through a resistance of  $10\Omega$  is  
a)  $0.2\Omega$  b)  $0.5\Omega$  c)  $0.8\Omega$  d)  $1\Omega$   $\frac{E-v}{R}$
- In Joule's law of heating, when I and t are constant, if the H is taken along the y axis and  $I^2$  along the x axis the graph is  
a) Straight line b) Parabola c) Circle d) Ellipse
- The force between two charges is 60N. If the distance between the charges is double. What will be the force?  
a) 60N b) 240N c) 420N d) 15N F ∝ 1/r^2

PART - B

Answer any four questions only. Qn.No. 8 is compulsory:

4 × 2 = 8

- What are the properties of an equipotential surface?
- Define 'electric flux'.
- Calculate the electric flux through the rectangle of sides 5cm and 10cm kept at an angle  $60^\circ$  in a uniform electric field  $100\text{NC}^{-1}$ .
- State the principle of potentiometer.
- What is Peltier effect?
- In a Wheatstone's bridge  $p = 100\Omega$ ,  $Q = 1000\Omega$  and  $R = 40\Omega$ . If the galvanometer shows zero deflection determine the value of "S".  $\frac{P}{Q} = \frac{R}{S}$

PART - C

Answer any four questions only. Qn.No. 17 is compulsory:

4 × 3 = 12

- Define electrostatic potential.
- Give any three applications of capacitors.
- A parallel plate capacitor has square plates of side 5cm and separated by a distance of 1mm. Calculate the capacitance of this capacitor.
- Distinguish between drift velocity and mobility.
- State Kirchoff's Voltage rule.
- A resistance of a nichrome wire at  $0^\circ\text{C}$  is  $10\Omega$ . If its temperature co-efficient of resistance is  $0.004/^\circ\text{C}$ . Find its resistance at boiling point of water.  $R = R_0(1 + \alpha \Delta T)$

PART - D

Answer all the questions:

2 × 5 = 10

- Derive an expression for the electric field due to a dipole on its axial line. (OR) Explain in detail the construction and working of a Van de graaff generator.
- Explain the equivalent resistance of series and parallel resistor network. (OR) Obtain the condition for bridge balance in Wheatstone's bridge.