

MONTHLY TEST - JULY 2022

Standard - XII

Reg No.

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PHYSICS

Marks: 35

Time: 1.30 hrs.

PART - A

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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) 8.80×10^{-17} J b) -8.80×10^{-17} J c) 4.40×10^{-17} J d) 5.80×10^{-17} J
- 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
- The internal resistance of a 2.1v cell which gives a current of 0.2A through a resistance of 10Ω is
a) 0.2Ω b) 0.5Ω c) 0.8Ω d) 1Ω
- 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

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° in a uniform electric field 100NC^{-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".

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°C is 10Ω . If its temperature co-efficient of resistance is $0.004/^\circ\text{C}$. Find its resistance at boiling point of water.

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.