

Ts12P

Tenkasi District

Common First Mid Term Test - 2024



30 07-2024

Standard 12

PHYSICS

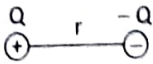
Time: 1.30 Hours

Marks: 35

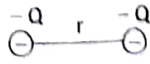
I. Choose the correct answer for the following questions:

10×1=10

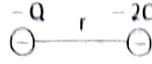
- 1) Rank the electrostatics potential energies for given system of charges in increasing order



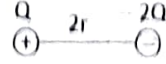
(1)



(2)

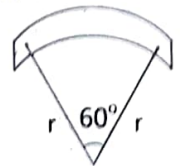


(3)



(4)

- a)  $1 = 4 < 2 < 3$     b)  $2 = 4 < 3 < 1$     c)  $2 = 3 < 1 < 4$     d)  $3 < 1 < 2 < 4$
- 2) A Parallel plate capacitor stores a charge  $Q$  at a voltage  $V$ . Suppose the area of the parallel plate capacitor and two distance between the plates are each doubled then which is the quantity that will change?
- a) capacitance    b) charge    c) Voltage    d) Energy density
- 3) The specific resistance of a thin and thick copper wire is  $\rho_1 \Omega m$  and  $\rho_2 \Omega m$  respectively then
- a)  $\rho_1 > \rho_2$     b)  $\rho_2 > \rho_1$     c)  $\rho_1 = \rho_2$     d)  $\frac{\rho_1}{\rho_2} = \infty$
- 4) In Joule's heating law, when  $R$  and  $t$  are constant If the  $H$  is taken along  $y$ -axis and  $I^2$  along  $x$ -axis the graph is
- a) straight line    b) parabola    c) circle    d) ellipse
- 5) The internal resistance of a 2.1 volt cell which gives a current of 0.2 A through a resistance of  $10\Omega$  is
- a)  $0.2 \Omega$     b)  $0.5 \Omega$     c)  $0.8 \Omega$     d)  $1.0 \Omega$
- 6) The vertical component of Earth's magnetic field at a place is equal to the horizontal component. Which is the value of angle of dip at this place?
- a)  $30^\circ$     b)  $45^\circ$     c)  $60^\circ$     d)  $90^\circ$
- 7) A bar magnet of length  $l$  and magnetic moment  $P_m$  is bent in the form of an arc as shown in figure. The new magnetic dipole moment will be
- a)  $P_m$     b)  $\frac{3}{\pi} P_m$
- c)  $\frac{2}{\pi} P_m$     d)  $\frac{1}{2} P_m$
- 8) A charged metal hollow sphere have zero electric field at
- a) Outside the sphere
- b) on the surface of the sphere
- c) inside the sphere
- d) two time of the distance from the sphere
- 9) The resistance of the wire varies inversely as
- a) Area of cross section    b) Resistivity
- c) Length    d) Temperature
- 10) 1 Weber = .....
- a)  $10^6$  maxwell    b)  $10^{-6}$  maxwell    c)  $10^8$  maxwell    d)  $10^{-8}$  maxwell

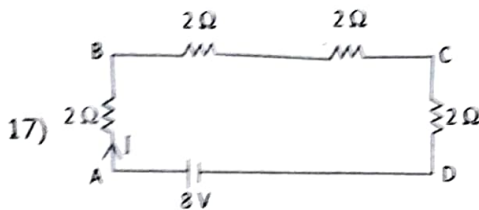


**II. Answer any 3 questions: Q.No. 15 is compulsory.****3×2=6**

- 11) The electric field lines never intersect. Justify
- 12) State Kirchoff's voltage Law.
- 13) Give the Fleming's left hand rule
- 14) The resistance of a nicrome wire at 20°C is 10 Ω . If the temperature coefficient of resistance is 0.004/°C find its resistance at boiling point of water.
- 15) Find the frequency of oscillating electric field applied in between to Ds cyclotron working in magnetic field of 1 T.

**III. Answer any 3 questions: Q.No. 20 is compulsory.****3×3=9**

- 16) Discuss the conversion of galvanometer into an ammeter.



Calculate the current through the circuit.

- 18) Obtain the expression for energy stored in the parallel plate capacitor.
- 19) Give the properties of Dia magnetic material.
- 20) Differ - Polar molecule and Non-polar molecule

**IV. Answer all the questions.****2×5=10**

- 21) a) Describe the microscopic model of current and obtain microscopic form of Ohm's Law

**(OR)**

- b) Obtain the expression for electric field due to an infinitely Long charged wire.

- 22) a) Derive the expression for the force on a current carrying conductor in a magnetic field.

**(OR)**

- b) How the emf of two cells are compared using potentiometer?

Sivakumar.M, Sri Ram Mathic HSS,  
Vallam-627809, Tenkasi Dist