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PERIODIC TEST 2023-24 - CLASS XII PHYSICS

PRACTICE PAPER 2 (ELECTROSTATICS & ELECTRICITY)

TIME: - 90 min

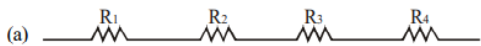
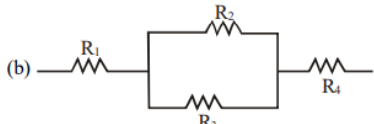
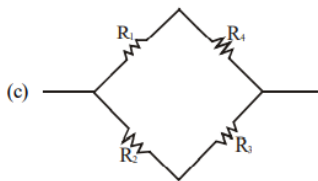
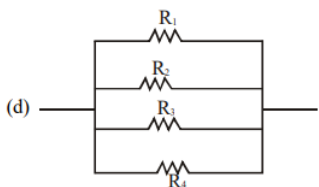
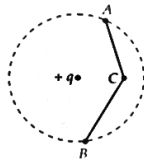
MM 40

NOTE- All questions are compulsory

SECTION A contains 9 MCQs of 1 mark each, SECTION B contains 5 questions of 2 marks each

SECTION C contains 4 questions of 3 marks each, SECTION D contains 1 case study-based question of 4 marks, SECTION E contains 1 long answer question of 5 marks.

S. No.	SECTION A	MARKS
1	Which of the following statements is false for a perfect conductor? (a) The surface of the conductor is an equipotential surface. (b) The electric field just outside the surface of a conductor is perpendicular to the surface. (c) The charge carried by a conductor is always uniformly distributed over the surface of the conductor. (d) None of these.	1
2	The dimensions of fall of potential per unit distance are given by: (a) $[MLT^{-3} A^{-1}]$ (b) $[ML^2T^{-2}A^{-1}]$ (c) $[ML^2T^{-2}A^{-3}]$ (d) $[MLT^{-2}A^{-2}]$	1
3	Two charges of equal magnitudes kept at a distance r exert a force F on each other. If the charges are halved and distance between them is doubled, then the new force acting on each charge is (a) $\frac{F}{8}$ (b) $\frac{F}{4}$ (c) $4F$ (d) $\frac{F}{16}$	1
4	A capacitor has some dielectric between its plates, and the capacitor is connected to a dc source. The battery is now disconnected and then the dielectric is removed, then (a) capacitance will increase. (b) energy stored will decrease. (c) electric field will increase. (d) voltage will decrease.	1
5	When a current, is set up in a wire of radius r , the drift velocity is v_d . If the same current is set up through a wire of radius $2r$, the drift velocity will be (a) $4v_d$ (b) $2v_d$ (c) $v_d/2$ (d) $v_d/4$	1

6	<p>Four resistors R_1, R_2, R_3 and R_4 are connected in different ways. Which of the following combinations will draw the maximum current when connected to a battery?</p> <p>(a) </p> <p>(b) </p> <p>(c) </p> <p>(d) </p>	1
7	<p>A metal wire is subjected to a constant potential difference. When the temperature of the metal wire increases, the drift velocity of the electron in it</p> <p>(a) increases, thermal velocity of the electron increases (b) decreases, thermal velocity of the electron increases (c) increases, thermal velocity of the electron decreases (d) decreases, thermal velocity of the electron decreases</p>	1
8	<p>Answer:(a) Both are correct and reason is correct explanation of assertion. Answer: (b) Both are correct but reason is not the correct explanation of assertion. Answer:(c) Reason is wrong. Answer:(d) Both are wrong. A: Electric field lines are continuous curves in free space. R: Electric field lines start from negative charge and terminate at positive charge.</p>	1
9	<p>Answer:(a) Both are correct and reason is correct explanation of assertion. Answer: (b) Both are correct but reason is not the correct explanation of assertion. Answer:(c) Reason is wrong. Answer:(d) Both are wrong. A: The drift velocity of electrons in a metallic wire will decrease, if the temperature of the wire is increased. R: On increasing temperature, conductivity of metallic wire decreases.</p>	1
SECTION B		
10	Define temperature coefficient of a conductor.	2
11	Define equipotential surfaces.	2
12	An electron and a proton are kept in the same electric field. Will they experience same force and have same acceleration?	2
13	<p>A point charge q is taken from a to c and then from c to b of a circle drawn with another point charge $+q$ at the centre, then along which path more work will be done?</p> 	2

	<p>2. A cell of emf ϵ and internal resistance r gives a current of 0.5 A with an external resistance of $12\ \Omega$ and a current of 0.25 A with an external resistance of $25\ \Omega$. What is the value of internal resistance of the cell?</p> <p>(a) $5\ \Omega$ (b) $12\ \Omega$ (c) $7\ \Omega$ (d) $3\ \Omega$</p> <p>3. An external resistance R is connected to a cell of internal resistance r, give the condition when maximum current flows in the external resistance. 2</p> <p style="text-align: center;">OR</p> <p>3. IF external resistance connected to a cell has been increased to 5 times, the potential difference across the terminals of the cell increases from 10 V to 30 V. Then, what is the emf of the cell? 2</p>	
	SECTION E	
20	<p>(a) Why electric field lines never intersect each other? 2</p> <p>(b) Find electric field at a point on equatorial line due to an ideal dipole. 3</p>	5