



COMMON FIRST MID-TERM TEST – 2023

Standard XII

Reg.No. :

PHYSICS

Thoothukudi District

Time: 1.30 hrs.

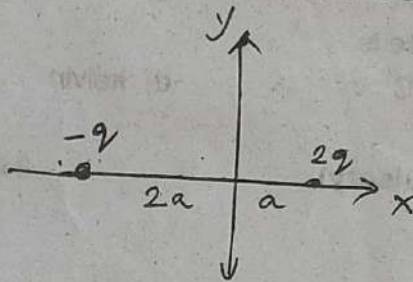
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Part - I

I. Choose the correct answer:

10 x 1 = 10

- Which charge configuration produces a uniform electric field?
 - point charge
 - infinite line
 - uniformly charged infinite plane
 - uniformly charged spherical shell
- The magnitude of the electric dipole moment for the following charge configuration.



- Zero
 - $2qa$
 - $-4qa$
 - $4qa$
- Two points A and B are maintained at a potential of 7V and $-4V$ respectively. The work done in moving 50 electrons from A to B is
 - $8.8 \times 10^{-17} \text{ J}$
 - $-8.8 \times 10^{-17} \text{ J}$
 - $4.4 \times 10^{-17} \text{ J}$
 - $5.8 \times 10^{-17} \text{ J}$
 - The principle of a capacitor is
 - corona discharge
 - electrostatic induction
 - electromagnetic induction
 - Coulomb's law
 - The torque experienced by a electric dipole is placed in an uniform electric field at an angle 30° is
 - PE
 - $\frac{PE}{2}$
 - $\frac{PE}{\sqrt{2}}$
 - 2PE
 - In Joule's law, when R and t constant, if the H is taken along y axis and I^2 along x axis, the graph is
 - straight line
 - parabola
 - circle
 - ellipse
 - A toaster operating at 240V has a resistance of 120Ω . Its power is
 - 400 W
 - 2 W
 - 480 W
 - 240 W
 - A carbon resistor of $(47 \pm 4.7) \text{ K}\Omega$ to be marked with rings of different colours for its Identification. The colour code sequence will be
 - yellow - green - violet - gold
 - yellow - violet - orange - silver
 - violet - yellow - orange - silver
 - green - orange - violet - gold

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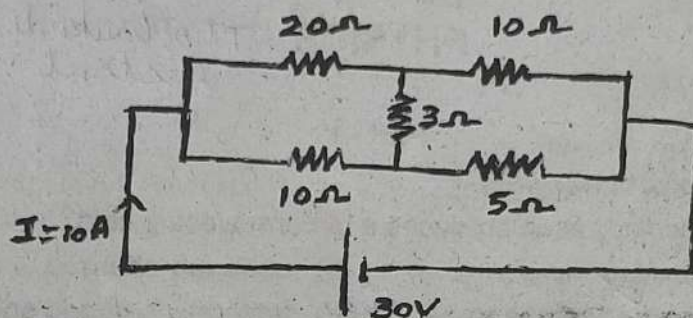
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9. The current flowing through the 3 ohm resistor in the circuit is



- a) 1A b) 2A c) 0A d) 3A
10. The unit of temperature coefficient of resistance is
a) ohm b) ohm-metre c) $^{\circ}\text{C}$ d) kelvin

Part - II

II. Answer any 3 questions. (Q.No.15 is compulsory)

3 x 2 = 6

11. The electric field lines never intersect. Justify.
12. What is Corona discharge?
13. Define electrical resistivity.
14. State the principle of potentiometer.
15. Resistance of material at 20°C and 40°C are 45Ω and 85Ω respectively. Find its temperature coefficient of resistivity.

Part - III

III. Answer any 3 questions. (Q.No.20 is compulsory)

3 x 3 = 9

16. Write down any three important aspects of electric field.
17. Obtain the expression for energy stored in the parallel plate capacitor.
18. Distinguish between drift velocity and mobility.
19. State Kirchhoff's rules.
20. A parallel plate capacitor has square plates of side 5 cm and separated by a distance of 1 mm. Calculate the capacitance of this capacitor.

Part - IV

IV. Answer all the questions.

2 x 5 = 10

21. a) Derive the expression for electrostatic potential due to an electric dipole.
(OR)
- b) Obtain the expression for electric field due to an Infinity charged wire.
22. a) Explain the determination of the Internal resistance of a cell using voltmeter.
(OR)
- b) Obtain the condition for bridge balance in Wheatstone's bridge.

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