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NEET ELECTROMAGNETIC WAVES — DISPLACEMENT CURRENT AND MAXWELL'S EQUATIONS (QUALITATIVE) — PYQS

Max. Marks: 20 **Questions:** 5

Section A (MCQ) — 5 questions

Q.1 A parallel plate capacitor made of circular plates is being charged such that the surface charge density on its plates is increasing at a constant rate with time. The magnetic field arising due to displacement current is: [NEET (UG) 2025]

(1) Non-zero everywhere with maximum at the imaginary cylindrical surface connecting peripheries of the plates

(2) Zero between the plates and non-zero outside

(3) Zero at all places

(4) Constant between the plates and zero outside the plates

Scan or tap for the full solution

Q.2 A parallel plate capacitor is charged by connecting it to a battery through a resistor. If I is the current in the circuit, then in the gap between the plates: [NEET (UG) 2024]

(1) There is no current

(2) Displacement current of magnitude equal to I flows in the same direction as I

(3) Displacement current of magnitude equal to I flows in a direction opposite to that of I

(4) Displacement current of magnitude greater than I flows but can be in any direction

Scan or tap for the full solution

Q.3 A capacitor of capacitance 'C', is connected across an ac source of voltage V, given by

$V = V_0 \sin \omega t$

The displacement current between the plates of the capacitor, would then be given by : [NEET (UG) 2021]

(1) $I_d = V_0 \omega C \sin \omega t$ (2) $I_d = V_0 \omega C \cos \omega t$

(3) $I_d = \frac{V_0}{\omega C} \cos \omega t$ (4) $I_d = \frac{V_0}{\omega C} \sin \omega t$

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Q.4 A parallel plate capacitor of capacitance 20 μF is being charged by a voltage source whose potential is changing at the rate of 3 V/s. The conduction current through the connecting wires, and the displacement current through the plates of the capacitor, would be, respectively : [NEET (UG) 2019]

(1) zero, zero (2) zero, 60 μA

(3) 60 μA, 60 μA (4) 60 μA, zero

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Q.5 A 100 Ω resistance and a capacitor of 100 Ω reactance are connected in series across a 220 V source. When the capacitor is 50% charged, the peak value of the displacement current is [NEET 2016 (Phase 2)]

(1) 2.2 A (2) 11 A

(3) 4.4 A (4) $11\sqrt{2}$ A

Scan or tap for the full solution

ANSWER KEY

Ques.	1	2	3	4	5						
Ans.	1	2	2	3	1						