Giridhar Kumar

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SEM-IV Unit-I Paper-06

Important Question and Answers:-

Q① Write the differential form of Maxwell's equations.

Ans:- (a) Gauss Law

$$\nabla \cdot \vec{E} = \frac{\rho}{\varepsilon_0} \quad \text{---(i)}$$

(b) Gauss Law for magnetism

$$\nabla \cdot \vec{B} = 0 \quad \text{---(ii)}$$

(c) Faraday law:-

$$\nabla \times \vec{E} = -\frac{\partial \vec{B}}{\partial t} \quad \text{---(iii)}$$

(d) Ampere-Maxwell law:-

$$\nabla \times \vec{B} = \mu_0 \vec{J} + \mu_0 \varepsilon_0 \frac{\partial \vec{E}}{\partial t} \quad \text{---(iv)}$$

Q② Define displacement current.

Ans:- Displacement current is the current due to changing electric field.

$$\vec{J}_d = \varepsilon_0 \frac{\partial \vec{E}}{\partial t}$$

It was introduced by Maxwell to correct Ampere's law.