

Group-A

(Multiple-Choice Questions)

(Compulsary)

1x4

Answer any Four questions:

- I. The unit of magnetic flux is (a) henry (b) weber (c) ampereturn/weber (d) ampere/metre
- II. As per Faraday's laws of electromagnetic induction, an e.m.f. is induced in a conductor whenever it (a) lies perpendicular to the magnetic flux (b) lies in a magnetic field (c) cuts magnetic flux (d) moves parallel to the direction of the magnetic field
- III. The law that the induced e.m.f. and current always oppose the cause producing them is due to (a) Faraday (b) Lenz (c) Newton (d) Coulomb
- IV. Maxwell's equations can be written in (a) integral form (b) differential form (c) logical form (d) either in differential form or integral form.
- V. The third Maxwell law is based on which law? (a) Ampere law (b) Faraday law (c) Lenz law (d) Faraday and Lenz law.
- VI. Which of the following identities is always zero for static fields? (a) $\text{Grad}(\text{Curl } \mathbf{V})$ (b) $\text{Curl}(\text{Div } \mathbf{V})$ (c) $\text{Div}(\text{Grad } \mathbf{V})$ (d) $\text{Curl}(\text{Grad } \mathbf{V})$

Group -B

Long-Answer Type Questions: Answer any Four Questions

1. Briefly discuss the energy stored in magnetic field. 04
2. (a). State and explain Faraday's law of em-induction 04
(b). What do you mean by vector potential?
3. What is Ampere's circuital law? Explain it in differential and integral form. 04
4. (a) Write and explain differential and integral forms of Maxwell's equations. 04
(b) What do mean displacement current?
5. Derive an expression for vector potential due to long wire of small circular cross-section carrying the current of 1 amp. 04
6. State and explain Poynting Theorem. 04