

Roll No.

Total Pages : 3

017403

May 2023

**B.Tech. (EEIOT) IV SEMESTER
Electromagnetic Waves (ECC-02)**

Time: 3 Hours]

[Max. Marks. : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What do you understand by Curl? Explain.
(b) What are various types of medias used in Electromagnetic waves?
(c) What is the need of volume intergrals? Explain.
(d) Compare working of maxima and minima in VSWR.
(e) Explain conduction current density. Write equation.
(f) Write equations for reflection coefficient, what do you mean by it?

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- (g) What are characteristics of magnetic vector potential?
- (h) What do you mean by plane waves.
- (i) Explain the importance of Brewster angle.
- (j) Define skin effect in wave propagation. $(1.5 \times 10 = 15)$

PART-B

2. (a) What are the advantages of impedance matching?
How it is applied? (7.5)
- (b) Derive expression for transmission line equation. (7.5)
3. (a) What are boundary conditions? State and prove? (7.5)
- (b) Derive expression for Maxwell equations in integral and phasor forms. (7.5)

4. (a) State and prove Poynting vector theorem. What are its applications? (7.5)
- (b) Compare phase and group velocity. Give examples. (7.5)

5. (a) What are plane waves? What are their components? Derive expression for plane waves by using Maxwell equations. (7.5)
- (b) State the effect of polarization of waves in different medias. How it is applied? (7.5)

6. Derive expression for fields for Hertz dipole? What are its applications? (15)

7. Write short notes on :

- (a) Circular wave guides. (7.5)
- (b) Impossibility of TEM modes in metallic waveguides. (7.5)