

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ECE) (Sem.-3)
ELECTROMAGNETIC WAVES

Subject Code : BTEC-303-18

M.Code : 76446

Date of Examination : 15-06-2024

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. Differentiate between Electromagnetic theory & Circuit theory.
- b. What do you mean the terms Propagation constant and Attenuation constant?
- c. Give the significance of Smith Charts?
- d. What is Transmission co-efficient?
- e. Define a Uniform plane wave.
- f. Define Surface Impedance in Electromagnetics.
- g. Draw and label the circuit representation of a Transmission line.
- h. What are Rectangular and Circular waveguides? Draw their field patterns.
- i. What are Group velocity and Phase velocity in uniform plane waves?
- j. What is the significance of Poincare's sphere?

SECTION-B

2. State and prove - Poynting theorem.
3. Define the various S-parameters that can be for analysing transmission lines. Discuss them.
4. How can you derive a generalised equation for a uniform plane wave?
5. Discuss surface currents on the waveguide walls taking suitable examples.
6. Derive the relation between the amplitudes of E & H in a travelling plane Electromagnetic Waves.

SECTION-C

7. Write Maxwell's equation in free space for the time varying fields both in differential form and integral form. Also interpret them.
8. Discuss the boundary conditions required for electromagnetics for two media with a surface of discontinuity using a suitable diagram.
9. **Write a short note on:** Impedance Matching in transmission lines.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.