

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electrical and Electronics Engg. / Electronics & Electrical Engg.) (Sem.-6)

**ELECTROMAGNETIC WAVES**

Subject Code : BTEE-603A-18

M.Code : 79946

Date of Examination : 07-07-22

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) Define Polarization.
- b) State Ampere's circuit law.
- c) Define pointing vector.
- d) What is smith chart?
- e) Define surface charge density.
- f) What is total internal reflection?
- g) Define wave polarization.
- h) What is lossy media?
- i) Define dispersion.
- j) Define antenna.

### SECTION-B

2. Derive the time varying Maxwell's equation in point form.
3. Prove that the characteristic impedance of a Uniform plane wave is  $377\Omega$ .
4. An EM Wave in free space is incident normally on a dielectric whose  $\epsilon_r = 5$ . Find the reflection and transmission coefficients.
5. Derive the input impedance of lossless  $\lambda/4$  transmission line.
6. Describe how matching is achieved using double stub matching.

### SECTION-C

7. Which Maxwell's equation is used to remove inconsistency of ampere's law? Give the equation with appropriate reason.
8. What are secondary constants of transmission lines and explain their significance.
9. Explain rectangular waveguide in detail.

**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.**