Roll No. ⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚⬚ 　　　　　Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EEE) (Sem.–3)
ELECTROMAGNETIC WAVES
Subject Code : BTEC-303-18
M.Code : 76446
Date of Examination: 29-12-2023

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. Write the criteria for Conductors and Dielectrics from Electro magnetics point of view.

   b. What do you mean the terms Skin Depth and Attenuation constant?

   c. Give the significance of Smith Charts?

   d. What is Reflection co-efficient?

   e. What is a Low-loss transmission line?

   f. Define Surface Impedance in electromagnetics.

   g. Draw and label the circuit representation of a Transmission line.

   h. What is a Rectangular waveguide? Give its application(s).

   i. What are Group velocity and Phase velocity in uniform plane waves?

   j. What is the significance of Poincare's sphere?

SECTION-B

2. Write Maxwell's equation in free space for the time varying fields both in differential form and integral form. Also interpret them.

3. What are the various S-parameters that can be used for analysing transmission lines? Discuss them.

4. How can you derive general equation for uniform plane waves?

5. Discuss surface currents on the waveguide walls taking suitable example.

6. Prove that in a travelling plane electromagnetic wave there is a definite ratio between the amplitudes of E & H. What is this ratio?

SECTION-C

7. State and prove - Poynting theorem. Also derive it in complex form.

8. A distortion less transmission line has the following parameters: $Z_0 = 50\Omega$, $\alpha = 0.020$ dB/m, $v_p = 0.6v_o$. Determine the line parameters R, L, C, G and wavelength at 0.2 GHz.

9. Write 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.