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

Total No. of Questions : 18

B.Tech. (ECE) (Sem.–3)

ELECTROMAGNETIC WAVES

Subject Code : UC-BTEC-303-19

M.Code : 78748

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

Write briefly :

1) What do you understand by VSWR?

2) Define Skin depth in a wave.

3) What is the significance of S-parameters?

4) Give the mathematical relationship between VSWR and Reflection coefficient.

5) How can you define Total Internal Reflection?

6) Name various Co-ordinate systems that can be used in Vector calculus.

7) Define: Phase velocity and Group velocity in a electromagnetic wave giving their mathematical expressions.

8) Give the significance of Poincare's Sphere.

9) Give the types of Waveguides. List some applications of waveguides.

10) What is Attenuation in Waveguides?

SECTION-B

11) State and Prove Poynting Theorem.

12) How can you describe the surface currents on the walls of a waveguide? Give field visualization for current distribution in a parallel plane waveguide.

13) What are the major differences between Electromagnetic theory and Circuit Theory? List some applications of Electromagnetic theory.

14) How can you represent a parallel plane Transmission line using an equivalent circuit?

15) Discuss low loss radio frequency and UHF transmission lines.

SECTION-C

16) Derive the Maxwell's wave equations for time-varying electromagnetic field in differential form as well as integral form.

17) Discuss various propagation characteristics of EM waves in perfect conductors giving their mathematical expressions.

18) Discuss Wave equation and its general solution in different media.

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.