

Roll No.

OLE-3216
B. Tech. 5th Semester (ECE)
Examination – April, 2021
ELECTROMAGNETIC WAVES
Paper : PCC-ECE-301-G

Time : Three Hours]

[Maximum Marks : 75

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Q. No. 1 is *compulsory*. Attempt *one* question from each Section. All questions carry equal marks.

1. (a) Define characteristic impedance. $2.5 \times 6 = 15$
- (b) What is total internal reflection ?
- (c) What do you understand by attenuation ?
- (d) What is meant by radiation pattern ?

- (e) Define directivity.
- (f) What are the parameters of transmission line ?

SECTION – I

- 2. Derive the equation of attenuation constant and phase constant of transmission lines in terms of line constants R, L, C and G. 15
- 3. Explain the procedure for obtaining the smith chart using R and X circles. 15

SECTION – II

- 4. State and explain Maxwell's equations in differential and integral form. 15
- 5. (a) Explain the Poynting Theorem with its physical interpretation. 7.5
(b) Derive the expression for wave equation in lossy dielectric. 7.5

SECTION – III

- 6. Explain in detail the wave propagation in parallel plane waveguide. 15

7. Derive the solution for TE and TM mode in rectangular wave guide. 15

SECTION – IV

8. Explain monopole and dipole antenna in detail. 15

9. Write a short note on : 15

- (a) Power radiated by hertz dipole
 - (b) Radiation parameters of antenna.
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