Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 & Onwards) (Sem.–4)

ELECTROMAGNETIC FIELD THEORY

Subject Code : EC-208

M.Code : 57513

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. Answer briefly :

a. Differentiate between scalar quantity and a scalar field and vector quantity and a vector field.

b. Discuss the cartesian coordinate system.

c. What is a waveguide? What is its importance and applications?

d. Define Propagation constant.

e. Define clearly dominant and degenerate modes with examples.

f. State the significance of smith chart and its features.

g. What is meant by characteristic impedance of transmission line?

h. State and prove Gauss law.

i. What is the equation of continuity for steady currents?

j. What are the condition for field to be irrotational?

SECTION-B

2. Write and explain Maxwell's equation for static and time varying fields in both differential and integral form.

3. Explain the electromagnetic wave is transverse in nature.

4. Discuss the use of low loss RF and UHF transmission lines.

5. A rectangular waveguide with dimensions 4cm ×2cm operates at 10GHz. Find f_c and λ_c of TE_{10} mode.

6. Explain in brief skin effect.

SECTION-C

7. Derive the boundary conditions for time varying fields.

8. Discuss reflection of electromagnetic wave from a perfect insulator incident obliquely.

9. What is understood by polarization of EM waves? Explain linear, elliptical and circular polarization with appropriate figures.

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.