7. Find the reflection coefficients of a plane wave when the reflection is form a plane surface of a perfect dielectric for :

   (a) Normal incidence

   (b) Oblique incidence. **20**

8. (a) Derive propagation constant and characteristics impedance in terms of line parameters R, L, G and C for sinusoidal excitation. **10**

   (b) Explain VSWR. A 100 Ω lossless transmission line is connected to a load of 140 Ω. Calculate the voltage reflection coefficient and VSWR. **10**

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B. Tech. EXAMINATION, May 2019

(Fourth Semester)

(Old Scheme) (Re-appear)

(EE)

EE208

ELECTROMAGNETIC THEORY

Time : 3 *Hours*] [*Maximum Marks :* 100

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

Note : Attempt any *Five* questions. Each question carries equal marks.

1. (a) State and explain uniqueness theorem for field of a charge distribution. **10**

(b) In spherical coordinates, V = 0 for r = 10 m and V = 100 for r = 2 m Assuming free space between these concentric spherical shells, find electric field intensity and the potential function. **10**

2. (a) Show that E = ΔV and derive Poisson's Law. **5**

(b) Applying the gauss lawk find the field intensity due to uniformly charged solid sphere both inside and outside. **8**

(c) Find the energy of a uniformly charged spherical shell of total charge q and radius R. **7**

3. (a) A current filament of 5 A in the a_y direction is parallel to the y axis at x = 2 m, z = – 2 m. Find magnetic field strengh (H) at the origin. **10**

(b) Find the magnetic vector potential at a distance of ρ form a long straight wire carrying a steady current l. **10**

4. (a) State and explain the Ampere's force law of current elements and loops. **7**

(b) What is the continuity equation ? Derive it from the basics and describe all its forms. **13**

5. (a) What is the significance of Maxwell's equation ? Write the Maxwell's field equation's in differential and integral form. Also write its word statement. **13**

(b) Derive the wave equations for a dielectric medium. **7**

6. What is uniform plane wave ? Explain the propagation of uniform plane-wave. Derive the relation between E and H in a uniform plane-wave. **20**