R16

SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, November - 2020
ELECTROMAGNETIC WAVES AND TRANSMISSION LINES
(Com to ECE; EIE)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART –A

1. a) State Coulomb Law in electrostatics   (3M)

    b) State the point form of Ampere,s circuital law   (3M)

    c) What is Polarization?   (2M)

    d) State   the Poynting theorem   (2M)

    e) Mention the types of transmission lines   (2M)

    f) What is Stub Matching ?   (2M)

PART -B

2. a) Establish Gauss Law ᠈ in point form and integral form hence deduce (7M)
        Laplace᠈s and Poisson᠈s Equations.

    b) Write short note on Continuity Equation   (7M)

3. a) State and explain Ampere's law and also mention its applications.   (7M)

    b) Show that the displacement current in a capacitor is equal to the conduction (7M)
        current.

4. a) Explain the wave propagation in good conductors.   (7M)

    b) Explain the different types of polarization.   (7M)

5. a) Describe the concept of Reflection of an EM wave by a perfect dielectric at (7M)
        oblique incidence.

    b) Explain the concept of Brewster Angle.   (7M)

6. a) Derive the transmission line equations   (7M)

    b) The constants per km of a certain cable are: (7M)
        R = 6.75ohms ; L = 5.5mH ; C = 0.00872 µfd and G = 0.4 µ mhos. Calculate
        the Characteristic impedance, attenuation constant and phase velocity when
        w = 5000 radians per second

7. a) A transmission line of $710 \llcorner 14^{0}\ \Omega$ characteristic impedance, length 100 km (7M)
        is terminated in $300\ \Omega$. Its propagation constant is 0.007+j0.028 per   km.
        Find the Input impedance of the line.

    b) What is a Smith Chart ? and also explain the various applications of (7M)
        smith chart in Transmission line

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