Code No: R1622043 **R16** SET - 1

II B. Tech II Semester Supplementary Examinations, April - 2021
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**

~~~~~~

PART –A

1. a) Find the gradient of $V=x^2y+xyz$ (2M)
   b) Find H at (3Cm,4 Cm,0) due to infinite line current filament? (3M)
   c) Classify the medium and give their specification for EM Wave propagation? (3M)
   d) Define reflection and transmission coefficients? (2M)
   e) Define primary and secondary constants? Give the relation between them? (2M)
   f) Write short notes on Quarter wave transformer. (2M)

PART -B

2. a) Derive the 'E' at an observation point due to infinite line charge element? (7M)
   b) Define electric potential? Derive the potential at far distance if 'Q' is Placed at Origin? (7M)

3. a) Explain about ▼.B=0 (7M)
   b) Define Ampere's law and derive Maxwell's equation from this? (7M)

4. a) The magnetic field component of a wave is given by $H=30\cos(10^8t-6x)a_y$ mA/m. Determine a) The direction of Wave Propagation b) The wave length ,and c) The wave velocity (7M)
   b) Define polarization? Explain the types of polarization? (7M)

5. a) Derive reflection coefficient and transmission coefficient of E& H fields when Uniform plane wave propagating from rearer dielectric to denser dielectric medium in normal incidence. (7M)
   b) A plane wave in air is reflected at normal incidence from a lossless medium ($\varepsilon=\varepsilon_o,\mu=9\mu_o$).If the amplitude of the incident wave is 2 V/m. Find the Time - average power/m^2 of the transmitted wave. (7M)

6. a) A transmission line operating at 500MHz has Zo=80Ω, α=0.04 Np/m , β=1.5 rad/m. Find the line parameters R,L,G and C. (7M)
   b) Define infinite line, lossless line and distortion less line? (7M)

7. a) A Stub of length 0.12 λ is used to match a 60Ω lossless line to a load. If the Stub is located at 0.3λ from the load, Calculate the load impedance Z_L. (7M)
   b) Derive the relation between γ & S in 2-wire Transmission line? (7M)

||''|'''|''|'|'''||
~~~~~~