SP-97

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Seat No.	

T.Y. B.Tech. (ETC) (Semester - V) (CBCS)
Examination, December - 2023
ELECTROMAGNETIC ENGG.
Sub. Code : 80808

9542

Day and Date : Saturday, 02- 12 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 1.00 p.m.

Instructions : **1)** **All questions are compulsory.**

2) **Figures to the right indicates full marks of the question.**

Q1) Solve the all Questions (Rewrite the statement by correct option) **[14]**

a) What would be the Standing Wave Ratio (SWR) for a line with reflection coefficient equal to 0.49?

i) 0.01 ii) 2.12

iii) 2.921 iv) 3.5456

b) Maxwell's second equation of staticfield is apoint form of _____.

i) Ampere's circuital law ii) Guass's law

iii) Lenz law iv) Biot Savart law

c) Which of the following laws do not form a Maxwell equation?

i) Faraday's law ii) Planck's law

iii) Gauss's Law iv) Ampere's Law

P.T.O.

d) The Gauss Divergence theorem converts.

i) Line to Surface Integral ii) Line to Volume Integral

iii) Surface to Line Integral iv) Surface to Volume Integral

e) Which among the following is not a boundary condition between the conductor and the dielectric $(\in = \in 0 \in r)$?

i) Et = 0 ii) Dt = 1

iii) DN = ρs iv) EN = ρs/ ε0εr

f) The divergence of the vectory $\hat{\imath}+\hat{z}j+\hat{x}k$

i) –1 ii) 0

iii) 1 iv) 3

g) Electric field intensity is defined as the ratio of _____ to the test charge.

i) Displacement ii) Pressure

iii) Force iv) Current

Q2) Solve any two **[14]**

a) Derive the expression for Electric field intensity at a point due infinite line charge?

b) Explain the concept of line integral, Surface integral & volume integral.

c) Find the volume charge density ξv at the point (1,2,3) in the free space given $V = (50x^2 yz+22y^2)$ v.

Q3) Solve any two **[14]**

a) Evaluate both sides of Divergence theorem D = 10 ×3/3 ax for the volume of cube 3m on the edge centred at origin and with edge parallel to the axis.

b) Explain potential Gradient & relation between E & V.

c) Explain Spherical co-ordinate system.

Q4) Solve any two **[14]**

a) State & Explain Stoke's theorem.

b) A transmission line has R = 4.11 Ω/KM, L = 0.00337 H/KM G = 0.29 μ mho/KM, C = 0.00945 μF/Km. Determine input impedance, characteristics impedance & propagation constant of 20km long line terminated in a load 100+j100Ω at a frequency 1kHZ.

c) Write a note on Smith chart and its Application.

Q5) Solve any two **[14]**

a) Write a note on

i) Skin depth

ii) Retarded potential

b) State & Explain Ampere's circuital Law.

c) A lossless transmission line of 50Ω is terminated in 25+j50, Ω. Find using Smith chart

i) VSWR

ii) Reflection Coefficient

iii) Impedance at 0.3 λ from load.

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