TEE-501

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

Odd Semester Examination, 2019-20
B. Tech: EEE (Semester: 5th)
Electromagnetic Field Theory

Time: 3:00hr **Max. Marks:100**

Total no. of printed pages: 1

Note : (i) Attempt ALL questions.
(ii) In case of numerical problems assume data whenever not provided.

4X5=20

Q1. Attempt **any four** of the following

(a) Points P and Q are located at (0,2,4) and (-3,1,5) calculate
a) The position vector P
b)The distance vector P to Q

(b) State and explain
a) Divergence theorem.
b)Stokes Theorem.

(c) Define Voltage reflection coefficient, current reflection coefficient and VSWR.

(d) State and explain Gauss's law in different form.

(e) What is gradient of any scalar? Prove curl of gradient of any scalar is zero.

(f) Explain rectangular to cylindrical point transformation.

4X5=20

Q2. Attempt **any four** of the following

(a) Write short note on boundary condition in two perfect dielectric media.

(b) Explain conduction and convection current.

(c) Derive ohms law in point form.

(d) Calculate the capacitance of two cylindrical conductors.

(e) Calculate the electric field density D at (2, pi/2,0) when potential is defined as $V= (10/r^2)\sin\theta\cos\varphi$.

(f) Define dipole moment & electric flux and flux density.

2x10=20

Q3. Attempt **any two** of the following

(a) State and explain Poynting theorem

(b) Explain boundary condition in magnetostatic field.

(c) Explain the following
a. Scalar Magnetic Potential.
b.Vector Magnetic Potential.

2x10=20

Q4. Attempt **any two** of the following

(a) Write the differential form of Maxwell's equations. Are all Maxwell's equation are independent of each other?

(b) Define Biot-Savart's Law and give its one application.

(c) Discuss in brief the case of wave propagation in lossy dielectric.

2x10=20

Q5. Attempt **any two** of the following

(a) Derive transmission line equation

(b) Determine the divergence and curl of the following vector and evaluate them at the specified pointA= $yz\mathbf{a}_x+4xy\mathbf{a}_y+y\mathbf{a}_z$ at point (1, 2, 3).

(c) Derive and relation between E and H in uniform plane wave propagation. Define intrinsic impedance and give its physical significance.

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