

(Following Paper ID and Roll No. to be filled in your answer book)

Paper ID: 3081

Roll No.

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B.Tech
IVth SEM. EXAMINATION, 2009-2010
ELECTROMAGNETIC FIELD THEORY

*Time: 3hrs.**Max. Marks: 100*

Note : Attempt all questions. All questions carry equal marks. Assume missing data if any.

Q.1 Attempt any two parts of the followings.

- (a) Describe the spherical and cylindrical coordinate system. How it is converted in other coordinate system.
- (b) Describe the gradient of a scalar field.
- (c) Explain curl of a vector field and stokes theorem

Q.2 Attempt any two parts of the followings.

- (a) What do you mean by electric potential? Explain it.
- (b) Describe the electric flux density and dielectric constant.
- (c) Describe the boundary condition in electro static field.

Q.3 Attempt any two parts of the followings.

- (a) Describe the amperes circuital laws of magneto static field.
- (b) Define biot-savart law and what are its applications.
- (c) State and explain the Maxwell's equation in differential and integral form.

Q.4 Attempt any two parts of the followings.

- (a) Discuss and prove the Poynting's Theorem and also mention its application.

- (b) Compute the power carried by an electric field of $E = 10 \sin(108 - 1.2x)$ kV/m. <http://www.uptuonline.com>
- (c) Determine the average power density and the value of associated magnetic field, if the break down electric field of the medium is 10V/m.

Q.5 Attempt any two parts of the followings.

- (a) Describe the wave characteristics of finite transmission line
- (b) What is a smith chart and why it is useful in making transmission line calculation.
- (c) What is meant by distortionless line. Compare the advantage and disadvantage of coaxial cables and two wire transmission line.
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