Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes

[Total No. of Questions: 09] [Total No. of Pages: ....2...]
Uni. Roll No. …….

Program: B. Tech (Electrical Engineering)
Semester: 3rd
Name of Subject: Electromagnetic Fields
Subject Code: PCEE-104
Paper ID: 16067

19-01-2022(M)

Time Allowed: 02 Hours **Max. Marks: 60**

NOTE:

1. Each question is of 10 marks.
2. Attempt any six questions out of nine
3. Any missing data may be assumed appropriately

1. Elaborate co-ordinate system in Electromagnetic Field Theory. Explain three co-ordinate system.
2. A) State and proof divergence theorem.
   B) State and proof Stoke's theorem.
3. A) Explain Poissons and Lapace's equations
   B) Define the potential difference and absolute potential. Give the relation between potential and field intensity
4. A) Derive the boundary conditions of the normal and tangential components of electric field at the inter face of two media with different dielectrics.
   B) Explain and derive the polarization of a dielectric materials.
5. A) A circular coil of 120 turns has a radius of 18 cm and carries a current of 3.0 A. What is the magnitude of magnetic field (i) at the centre of the coil (ii) at the point on the axis of the coil at distance from the centre equal to the radius of the coil?
   B) A direct current i = 10 A flows in a long straight round conductor. Find the magnetic flux through a half of the wire's cross-section per one meter of its length.

6. A) Derive an expression for force between two current carrying conductors.
   B) Explain Magnetic materials and scalar and vector magnetic potentials
7. A) What are the different ways of EMF generation? Explain with the governing equations and suitable practical examples.
   B) Derive General field relation for time varying electric and magnetic fields using Maxwell's' equations.
8. A) Drive an expression for Wave Equation for a conducting medium.
   B) State and proof Poynting theorem.
9. A) Derive the expression for the attenuation constant, phase constant and intrinsic impedance for a uniform plane wave in a good conductor.
   B) Briefly explain about the wave incident:
      (i) Normally on perfect conductor
      (ii) Obliquely to the surface of perfect conductor.

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