Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 31333

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electrical and Electronics Engineering

01UEE303 - FIELD THEORY

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define gradient.

2. Define divergence theorem.

3. Name few applications of Gauss law in electrostatics.

4. What is polarization?

5. State Biot –Savart's law.

6. Define self inductance.

7. What is displacement current and conduction current?

8. Write down Maxwell's equation in integral form.

9. Define Poynting vector.

10. Define skin effect. Mention its significance.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain different type of Coordinate system with mathematical expressions. (16)

Or

(b) State and explain (i) Divergence Theorem (ii) Stoke's theorem. (16)

12. (a) Determine the electric field intensity of an infinitely long, straight, line charge of a uniform density ρ_λ in air. (16)

Or

(b) Obtain the boundary conditions between a conductor and free space of electric field. (16)

13. (a) Using Bio-Savart law find H due to finite and infinitely long straight conductor. (16)

Or

(b) Obtain the boundary conditions of normal and tangential components of magnetic field at the interface of two media with different dielectrics. (16)

14. (a) Obtain the expressions for the Maxwell's equation in the point form and integral form. (16)

Or

(b) Differentiate field theory and circuit theory. (16)

15. (a) Derive the wave equations for plane waves in free space. (16)

Or

(b) Derive the transmission and reflection coefficient for the electromagnetic waves when incident normally on perfect dielectric. (16)

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