

Roll No. 

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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (EE) (2018 Batch) (Sem.-3)

**ELECTROMAGNETIC FIELDS**

Subject Code : BTEE-304-18

M.Code : 76384

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

**SECTION-A**

Write briefly :

1. Convert the vector  $A = x a_x + y a_y + z a_z$  into spherical coordinates.
2. Write down the Maxwell's equations in free space.
3. State Ampere's Circuital Law.
4. Define relation between VSWR and reflection coefficient.
5. State Stokes theorem.
6. Differentiate between Laplace and Poisson equation.
7. Define significance of a pointing vector.
8. State Faraday Law.
9. Differentiate between Ohms law and Coulomb law.
10. Define Intrinsic Impedance.

### SECTION-B

11. State and explain the boundary condition at the magnetic interface.
12. Derive the propagation of wave in the good conductor.
13. State and explain Ampere's law.
14. Discuss and derive the wave equation for the free space and conduction medium.
15. Derive the Poynting Theorem. Explain the significance of Poynting vector.

### SECTION-C

16. Write a note on :
  - a) Attenuation and Phase constant
  - b) Characteristic impedance.
17. Discuss the Maxwell's equations in differential and integral form for the time varying electric and magnetic field. Give the physical significance of each Maxwell's equation.
18. Derive an equation of continuity equation for the static and time varying field.