Reg. No. : | | | | | | | | | | |

Question Paper Code: 44403

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Fourth Semester

Electronics and Communication Engineering

14UEC403 – ELECTROMAGNETIC FIELDS

(Regulation 2014)

Duration: 1:45 hour Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. List the principles of superposition.
2. Define Biot-Savart Law.
3. Define mutual inductance.
4. State Poynting theorem.
5. Give the properties of conductors.
6. Define capacitance and state the factors on which it depends.
7. Moist soil is having the conductivity of 10^{-3} *s/m* and $\varepsilon_r = 2.5$. If $E = 4 \sin 8t$, then find the conduction current density.
8. Define electric dipole and dipole moment.
9. What is skin effect?
10. What are the standing waves?
11. State Divergence theorem.
12. Define curl and gradient of a vector.
13. Define Biot –Savarts Law in vector form.

14. Define mutual inductance.

15. Define polarization.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. State and prove Gauss law with applications (10)

17. Derive the expression for torque developed in a rectangular closed circuit carrying current I in a uniform field. (10)

18. Derive the boundary conditions of the normal and tangential components of magnetic field at the inter face of two media with different dielectrics. (10)

19. State Ampere's circuital law and prove the modified form of Ampere's circuital law as Maxwell's first equation in integral form. (10)

20. Derive the electromagnetic wave equations in frequency domain and obtain the expressions for intrinsic impedance and propagation constant for free space, conductor and dielectric medium. (10)