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Model Questions

SUB: Electronics SEM: VI PAPER: DSE-IV

[Transmission line, Antenna & Wave Propagation]

Group: A (MCQ)

1. Solutions of Laplace's Equations, which are continuous through second derivative, are called
   a) Bessel functions
   b) Odd functions
   c) Harmonic functions
   d) Fundamental functional
2. A Transmission line with R = G = 0 has a characteristics impedance that is
   a) Purely reactive
   b) Purely resistive
   c) Purely inductive
   d) purely capacitive
3. The force that exists in an electromagnetic wave
   a) Electrostatic force
   b) Magnostatic force
   c) Lorentz force
   d) Electromotive force
4. The torque on a conductor with flux density 23units, current1.6A area 6.75units will be
   a) 248.4
   b) 192.6
   c) 175.4
   d) 256.9
5. Which of the following electromagnetic radiation is used viewing objects through fog
   a) Microwave
   b) Gamma rays
   c) X-rays
   d) Infrared
6. Which of the following are false for electromagnetic waves
   a) Transverse
   b) Mechanical wave
   c) Produced by accelerating charges
   d) Longitudinal
7. During the propagation of electromagnetic waves in a medium
   a) Electric energy is double of the magnetic energy density
   b) Electric energy density is half of the of the magnetic energy density
   c) Electric energy density is equal to the magnetic energy density
   d) Both electric and magnetic energy densities are zeros
8. A radiation of energy E falls normally on a perfectly reflecting surface. The momentum transferred to surface is
   a) E/c
   b) 2E/c
   c) Ec
   d) E/c^2
9. Which of the following is an electromagnetic wave
   a) α-rays
   b) β-rays
   c) γ- rays
   d) all of them
10. Which of the following is used to produce a propagating electromagnetic wave
    a) An accelerating charge
    b) A charge moving at constant velocity
    c) A stationary charge
    d) An uncharged particles

11. Which of the following is NOT true for electromagnetic wave
    a) It transport energy
    b) It transport momentum
    c) It transport angular momentum
    d) In vacuum, it travels with different speeds which depend upon their frequency
12. The electric and magnetic fields of an electromagnetic wave are
    a) Out of phase and not perpendicular to each other
    b) In phase and not perpendicular to each other
    c) In phase and perpendicular to each other
    d) Out of phase and perpendicular to each other
13. Which of the following is not a primary parameter
    a) Resistance
    b) Attenuation constant
    c) Capacitance
    d) Conductance
14. The network in which the R, L, C parameters are individually concentrated or lumped at discrete points in the circuit are called
    a) Lumped
    b) Distributed
    c) Parallel
    d) Paired
15. The leakage current in the transmission line is referred to as the
    a) Resistance
    b) Radiation
    c) Conductance
    d) polarisation
16. Find the receiving impedance of a transmission line having voltage of 24V and a conduction current of 1.2A is
    a) 25.2
    b) 15
    c) 40
    d) 20
17. What is the characteristics impedance in terms of the impedance and capacitance parameters
    a) $Z_0 = \sqrt{LC}$
    b) $Z_0 = \sqrt{L/C}$
    c) $Z_0 = LC$
    d) None of these
18. In long transmission line Resistance and capacitance parameters of lines are connected in
    a) Series, shunt
    b) Series, series
    c) Shunt, shunt
    d) Shuynt parallel
19. Which of the following regulation is considered to be best
    a) 2%
    b) 3%
    c) 70%
    d) None of these
20. Characteristics Impedance of transmission line depends upon
    a) Shape of conductor
    b) Surface treatment of conductor
    c) Conductivity of material
    d) Geometrical configuration of conductor

Group: B

Short Answer Type Questions

1. What is electromagnetic wave? Explain all Maxwell's Equations.
2. What is skin effect? Give the factors on which Skin effect depends upon.
3. Explain and deduce the expression of skin depth and penetration.

4. What is transmission line? Explain all types of transmission lines.
5. What are Transmission line parameters?
6. Draw the equivalent circuit of Transmission line and explain it.
7. What is Characteristics impedance of Transmission line? Explain it.
8. What is displacement current and explain its importance for electromagnetic wave propagation.

Group: C

Long Answer Type Questions

1. Deduce an expression of Wave equation propagating in free space space.
2. Derive an expression for Electromagnetic wave propagating in conducting medium.
3. Derive an expression of reflection of plane wave at normal incident for perfect dielectric.
4. Give the equivalent circuit of transmission line and obtain the equation of Voltage and Current.
5. What is input impedance of Transmission line? Derive its equation.
6. Deduce the expression of V and I for short circuited and open circuited Transmission line.