Program: BE Electronics and Telecommunication Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code and Course Name: ECC503 Electromagnetic Engineering

Time: 1 hour Max. Marks: 50

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Note to the students:- All Questions are compulsory and carry equal marks .

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| Q1.  | The electric potential due to an electric dipole of length L at a point distance r away from it will be doubled if the |
| Option A: | Length L is doubled |
| Option B: | r is doubled |
| Option C: | r is halved |
| Option D:  | L is halved |
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| Q2. | The electrostatic energy in an electric field does not depend on which of the following? |
| Option A: | Magnitude of charges |
| Option B: | Permittivity |
| Option C: | Applied electric field |
| Option D: | Flux lines |
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| Q3. | Which of the following equation results from the Ampere circuital law? |
| Option A: | $$∇×E=-\frac{∂B}{∂t}$$ |
| Option B: | $$∇.B=0$$ |
| Option C: | $$∇. D=ρ$$ |
| Option D: | $$∇×H=J+\frac{∂D}{∂t}$$ |
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| Q4. | Coulomb is the unit of which quantity? |
| Option A: | Field strength |
| Option B: | Charge |
| Option C: | Permittivity |
| Option D: | Force |
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| Q5. |  ESD stands for |
| Option A: | Electronic Surveillance device |
| Option B: | Electric shock damage |
| Option C: |  Electrostatic discharge |
| Option D:  |  Electronic Software distribution |
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| Q6. | The current in a metal at any frequency is due to |
| Option A: | Conduction current |
| Option B: | Displacement current |
| Option C: | Both conduction and displacement current |
| Option D:  | Neither conduction nor displacement current |
|  |  |
| Q7.  | When the conduction current density and displacement current density are same, the dissipation factor will be |
| Option A: | Zero |
| Option B: | Minimum |
| Option C: | Maximum |
| Option D:  | Unity |
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| Q8.  |  \_\_\_\_\_\_\_\_\_\_\_ spray the ink directly through a series of holes onto the surface of paper as the printhead scans back and forth across the paper. |
| Option A: | Inkjet printer |
| Option B: | Photocopy |
| Option C: | Thermal printers |
| Option D:  |  Ribbons |
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| Q9. | Which of the following statements about electric field lines associated with electric charges is false? |
| Option A: |  Electric field lines can neither be straight or curved |
| Option B: | Electric field lines form closed loops |
| Option C: |  Electric field lines begin on positive charges and end on negative charges |
| Option D:  | Electric field lines do not intersect |
|  |  |
| Q10.  | When the rotational path of the magnetic field intensity is zero, then the current in the path will be |
| Option A: | 1 |
| Option B: | 0 |
| Option C: | ∞ |
| Option D:  | 0.5 |
|  |  |
| Q11.  | The intrinsic impedance η of a conducting medium for which σ = 58 Ms/m, µr1 at a frequency of 100 MHz is |
| Option A: | $$2.14×10^{5}∠45° Ω$$ |
| Option B: | $$1.84×10^{-3}∠45° Ω$$ |
| Option C: | $$3.69×10^{-3}∠45° Ω$$ |
| Option D:  | $$3.69×10^{-3}∠-45° Ω$$ |
|  |  |
| Q12.  | The capacitance of a material refers to |
| Option A: | a) Ability of the material to store magnetic field |
| Option B: | b) Ability of the material to store electromagnetic field |
| Option C: | c) Ability of the material to store electric field |
| Option D: | d) Potential between two charged plates |
|  |  |
| Q13. | Find the ratio of permeability of the two media when the wave is incident on the boundary at 45 degree and reflected by the boundary at 60 degree. |
| Option A: | 1:1 |
| Option B: | √3:1 |
| Option C: | 1:√3 |
| Option D:  | 1:√2 |
|  |  |
| Q14.  | For a test charge placed at infinity, the electric field will be |
| Option A: | Unity |
| Option B: | plus ∞ |
| Option C: | Zero |
| Option D:  | minus ∞ |
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| Q15. | For a solenoidal field, the surface integral of D will be |
| Option A: | 0 |
| Option B: | 1 |
| Option C: | 2 |
| Option D:  | 3 |
|  |  |
| Q16.  | If maximum and minimum voltages on a transmission lines are 4V and 2V respectively, VSWR is  |
| Option A: | 0.5 |
| Option B: | 2 |
| Option C: | 1 |
| Option D:  | 8 |
|  |  |
| Q17. | The current element of the magnetic vector potential for a surface current will be |
| Option A: | J dS |
| Option B: | I dL |
| Option C: | K dS |
| Option D: | J Dv |
|  |  |
| Q18. | For a lossy transmission line short circuited at the receieving end, the input impedance is given by (Z0 is tha characteristic impedance, γ is the propagation constant and l is the length of the line |
| Option A: | Z0 coth γl |
| Option B: | Z0 cot γl |
| Option C: |  Z0 tanh γl |
| Option D:  | Z0 tan γl |
|  |  |
| Q19.  | Polarization is characteristic of EM wave that gives the direction of  |
| Option A: | Electric component of a wave with respect to ground |
| Option B: | Magnetic component of EM wave with respect to ground |
| Option C: | Both electrical and magnetic components with respect to ground |
| Option D:  | Product of electric and magnetic components |
|  |  |
| Q20. | One complete rotation around the chart amounts to |
| Option A: | 0.25 λ |
| Option B: |  0.5 λ |
| Option C: | 1λ |
| Option D: | 0.75λ |
|  |  |
| Q21. | Which of the following parameters is not a primary parameter? |
| Option A: | Resistance |
| Option B: | Attenuation constant |
| Option C: | Capacitance |
| Option D:  | Conductance |
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| Q22.  | In which direction is the plane wave $\overbar{E}=50\sin(\left(10^{8}t+2z\right)\hat{a\_{y}})$ V/m, (where $\hat{a\_{y}}$ is the unit vector in y direction), travelling? |
| Option A: | Along y direction |
| Option B: | Along -y direction |
| Option C: | Along z direction |
| Option D:  | Along -z direction  |
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| Q23. | The curl of the electric field intensity is |
| Option A: | Conservative |
| Option B: | Rotational |
| Option C: | Divergent |
| Option D:  | Static |
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| Q24.  | The reflection coefficient lies in the range of |
| Option A: | 0 < τ < 1 |
| Option B: |  -1 < τ < 1 |
| Option C: | 1 < τ < ∞ |
| Option D:  |  0 < τ < ∞ |
|  |  |
| Q25. | Identify the devices that do not use electromagnetic energy. |
| Option A: | Television |
| Option B: | Washing machine |
| Option C: | Microwave oven |
| Option D:  | Mobile phones |