PRESIDENCY UNIVERSITY, BENGALURU

SCHOOL OF ENGINEERING

Weightage: 20 %   Max Marks: 20   Max Time: 1 hr.   Monday, 24th September, 2018

TEST – 1

Odd Semester 2018-19   Course: **ECE 217 Electro Magnetic Theory**   V Sem. ECE
& Transmission Lines

Instruction:

(i)   Read the question properly and answer accordingly.
(ii)   Question paper consists of 3 parts.
(iii)   Scientific and Non-programmable calculators are permitted.

Part A

(2 Q x 2 M = 4 Marks)

1. Points P and Q are located at (0, 2, 4) and (-3, 1, 5). Calculate position vector P and distance between P and Q?

2. Write the expression for scalar triple product and vector triple product?

Part B

(2 Q x 3 M = 6 Marks)

3. Three field quantities are given by P = 2ax - az, Q = 2ax - 2*ay* + 2az, and R = 2ax – 3ay + az. Determine (i) (P + Q) X (P - Q) (ii) (Q . R) X P (iii) P X (Q X R)?

4. State and prove Gauss's law?

Part C

(2 Q x 5 M = 10 Marks)

5. What is electric flux density? Write the equation for electric flux density? Determine D at (4, 0, 3) if there is a point charge -5π mC at (4, 0, 0)?

6. Derive the expression for electric potential? A point charge 5 nC is located at 10 cm from a point P, determine the voltage developed by the charge?

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TEST 2

Odd Semester: 2018-19

Course Code: ECE 217

Course Name: Electro Magnetic Theory & Transmission Lines

Branch & Sem: ECE & V Sem

Date: 27 November 2018

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:
(i)   Read the question properly and answer accordingly.
(ii)   Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **four** marks.   (2x4=08)

1. A wire of diameter 1mm and conductivity 5×10^7 S/m has 10^{29} free electrons/m^3, when an electric field of 10mV/m is applied. Determine (i) the charge density of the free electrons (ii) the current density

2. What is dielectric polarization? Why dielectric material will be inserted between the two conductors?

Part B

Answer **all** the Questions. **Each** question carries **six** marks.   (2x6=12)

3. What are boundary conditions? Write Poisson's and Laplace's equation?

4. State and prove Ampere's circuital law?

Part C

Answer **all** the Questions. **Each** question carries **ten** marks.   (2x10=20)

5. What is motional emf? Derive the expression for motional emf?

6. The electric field between the plates of area 5cmX10cm of a capacitor increases from 50V/m to 300V/m in 0.015ms. Calculate (a) the displacement current between the plates (b) the magnetic field at a distance of 50cm from the center of the plates in a direction perpendicular to the electric field between the plates?

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END TERM FINAL EXAMINATION

Odd Semester: 2018-19   **Date**: 28 December 2018

Course Code: ECE 217   **Time**: 2 Hours

Course Name: Electro Magnetic Theory & Transmission Lines   **Max Marks**: 40

Programme & Sem: ECE & V Sem   **Weightage**: 40%

Instructions:
(i)   Read the question properly and answer accordingly.
(ii)   Question paper consists of 3 parts.
(iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **both** the Questions. **Each** question carries **four** marks.   (2Qx4M=08)

1. Write the equation for propagation constant, characteristic impedance and phase velocity for lossless transmission line?
2. Define the terms reflection factor, reflection loss and insertion loss?

Part B

Answer **both** the Questions. **Each** question carries **six** marks.   (2Qx06M=12)

3. Derive the general solution for transmission line?
4. A 200 KM lossless transmission line is terminated in an impedance of Z_L=400 Ω. The line constants are R=0, G=0, L=1.85 mH/KM, C=2.56 nF/KM. Determine phase constant, propagation constant and velocity of propagation at frequency of 1000Hz?

Part C

Answer **both** the Questions. **Each** question carries **ten** marks.   (2Qx10M=20)

5. What are the important reasons for impedance matching? Construct constant reactance circle for Smith chart?
6. A transmission line whose characteristic impedance equal to 300 Ω is connected to a load of 73 Ω impedance. The line is to be matched using two stub with one stub connected near the load. Find the lengths, location and admittance of both stubs, if the frequency is 45 MHz and distance between the two stubs is λ/4?

RADIALLY SCALED PARAMETERS