



School: School of Engineering and Technology
 Program/s: Electrical and Electronics Engineering
 Year: 2nd Semester: 4th
 Examination: End Semester Examination
 Examination year: May - 2023

Course Code: EE 226 Course Name: Electro-magnetic Field Theory
 Date: 19/05/2023
 Time: 10:00 am to 12:00 noon

Total Marks: 40
 Total Pages: 01

Instructions:

- Write each answer on a new page.
- Assume the data when required.
- Use of calculator is allowed.

Attempt any Four:**SECTION I**

	Mark s 40	COs	BT
Q.1 If $\vec{H} = 10 \sin(2 \times 10^8 t + 8 x) \hat{a}_y$ A/m in a medium where relative permeability is 2 and relative permittivity is 1 and zero conductivity, determine \vec{B} and \vec{E} .	05	CO4	BT1 BT2
Q.2 Given $E = 10 \sin(\omega t - \beta z) \hat{a}_y$ in V/m in free space, determine \vec{D} , \vec{B} and \vec{H}	05	CO3	BT1 BT2 BT4
Q.3 A certain material has $\sigma = 0$ and $\epsilon_r = 1$ if $\vec{H} = 4 \sin(10^6 t - 0.01 z) \hat{a}_y$ A/m. Use Maxwell's equations to find μ_r .	05	CO4	BT3 BT4
Q.4 Derive Displacement of current density and proof of modified ampere's law	05	CO3	BT1 BT2 BT3
Q.5 Explain Maxwell's Equations in Different Forms.	05	CO3	BT1 BT2 BT3

Attempt any Four:**SECTION II**

Q.6 What do you understand by Boundary conditions for two different media? What are the three different media for boundaries. Explain for Boundary conditions for two different dielectrics.	05	CO1	BT1 BT2
Q.7 Find the electric field intensity for an uniform sheet charge in YZ plane.	05	CO1	BT1 BT2 BT3
Q.8 The electric flux density in a charge free region is given $\vec{D} = 10x\hat{a}_x + 5y\hat{a}_y + kz\hat{a}_z$ $\mu\text{C}/\text{m}^2$. Find the constant k.	05	CO1	BT1 BT2
Q.9 State the Gauss Law for Electric Flux and derive an expression for Maxwell first equation.	05	CO1	BT1 BT2
Q.10 Give the relation between \vec{D} and \vec{E} and give the important observations from the same.	05	CO1	BT1 BT2 BT3

*****End of Question Paper*****