19EET201-Field Theory
Question Bank
UNIT- IV

ELECTRODYNAMIC FIELDS

PART- A (2 MARKS)

1. State Faraday's law of induction .

2. State lenz's law

3. Give the equation of transformer emf

4. What is motional electric field?

5. What is motinal emf ?

6. What is the emf produced by moving loop in time varying field?7. What is time harmonic field ?

7. Give time harmonic maxwell's equation in point form. assume time factor e-it.

8. Distingush between Field theory and Circuit theory

9. Write Maxwell's equation in point and integral form for good conductors.

10. What Is significance of displacement current density?

11. In a material for which = 5s/m and r= 1 and E=250 sin 1010t (V/m) find the conduction and displacement current densities.

PART- B

1. What are the different ways of EMF generation? Explain with the governing equations and suitable practical examples.

2. With necessary explanation, derive the Maxwell's equation in differential and integral forms .

3. (a) What do you mean by displacement current? write down the expression for the total current density.

3. (b) In a material for which =5 s/m and r=1 and E=250 sin 1010t (V/m).find the conduction and displacement current densities.

4. (a) Find the total current in a circular conductor of radius 4mm if the current density varies

according to $J=104/R$ A/m2 .

4. (b) Given the conduction current density in a lossy dielectric as Jc=0.02 sin 109 t A/m2 .find the displacement current density if =103 mho/m and r=6.5 .

5 (a) Explain the relation between field theory and circuit theory.

5 (b)The magnetic field intensity in free space is given as H=H0sin ay t A/m.where = t-z and is a constant quantity. Determine the displacement current density.

6 (a) Write short notes on faradays law of electromagnetic induction.

6 (b) Show that the ratio of the amplitudes of the conduction current density and displacement current density is , for the applied field amplitude ratio if the applied field is E=Em e-t/ where is real.

7. Derive General field relation for time varying electric and magnetic fields using Maxwell's' equations.