Regulation R20 *Subject code: 3P3BE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Semester Supplementary Examinations, July 2022

ELECTROMAGNETIC FIELDS

EEE

Maximum Marks: 70 ***Date:29.07.2022*** Duration: 3 hours

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 What are the source of magnetic field?
2 What is physical significance of divergence of D.
3 Define potential.
4 State point form of ohms law.
5 Define magnetic moment.
6 State Ampere circuital law.
7 Give the equation of transformer emf.
8 State Faraday's law of induction.
9 Define a Wave.
10 Define displacement current density.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 Derive the expression for electric field intensity due to line charge, surface charge, volume charge. [10]

OR

12 Explain the cylindrical co-ordinate system with neat diagrams. [10]
13 Using Gauss law, derive an expression for electric field intensity at any point inside and outside of a sphere of radius 'a' due to a uniform spherical charge distribution of volume charge density of 'ρ'. [10]

OR

14 Explain poissons and lapace's equations. [10]
15 Derive the expressions for magnetic field intensity due to finite and infinite line. [10]

OR

16 Derive the expressions for magnetic flux intensity due to solenoid of the coil. [10]
17 Derive the expressions for magnetic field intensity due to toroidal coil and circular coil. [10]

OR

18 Write short notes on faradays law of electromagnetic induction. [10]
19 What do you mean by displacement current? write down the expression for the total current density. [10]

OR

20 a) Derive Maxwell's fourth equation, $\nabla XE = -\partial B/\partial t$. [5]
b) Explain statically and dynamically induced e.m.f. [5]