PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019

Course Code: EEE 204

Course Name: Electromagnetic Theory

Program & Sem: ECE / EEE & III Sem (2017 Batch)

Date: 24 July 2019

Time: 2 Hours

Max Marks: 80

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 **all** the Questions. **Each** question carries **six** marks.   (5Qx6M=30)

1. Bring out the analogy between electric fields and magnetic fields.
2. Express the different postulates of magnetic field in differential form and integral form.
3. The depth of penetration in a certain conducting medium 0.1m and the frequency of the electromagnetic wave is 1 MHz. Find the conductivity of the conducting medium.
4. State and explain Biot Savarts law.
5. Explain Lorentz force equation.

Part B

Answer **both** the Questions. **Each** question carries **twelve** marks.   (2Qx12M=24)

6. Derive the magnetic boundary conditions between two different dielectric media.
7. A 300 MHz uniform plane wave propagates through pure water for which $\sigma = 0$, $\mu_r = 1$, $\varepsilon_r = 78$. Calculate (a) attenuation constant, (b) Phase constant, (c) Wavelength and (d) intrinsic impedance.

Part C

Answer **both** the Questions. **Each** question carries **thirteen** marks.   (2Qx13M=26)

8. Planes z = 0 and z = 4 carry current K = -10 a_x A / m and K = 10 a_x A/m respectively. Determine magnetic field H at given points: (1, 1, 1) and (0, -3, 10).
9. State and explain Ampere's circuital law. Using this law find the magnetic field intensity H in all the regions due to an infinite long straight current carrying conductor.