SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Sc. - END SEMESTER EXAMINATIONS APRIL - 2022
SEMESTER - II
20PPHCT2006 - ELECTRO MAGNETIC THEORY AND PLASMA PHYSICS

Total Duration : 3 Hrs.   **Total Marks : 60**

Section A

Answer any **SIX** questions $(6 \times 5 = 30$ Marks$)$

1. Obtain the solution of Laplace equation in three dimension.

2. State and explain second uniqueness theorem.

3. Derive Ampere's law in integral form.

4. Discuss Faraday's law of induction.

5. Discuss in detail about vector and scalar potentials, use it to reduce the Maxwell's' equation.

6. Give an account on plane waves in a nonconducting medium.

7. Write down the magneto-hydrodynamical equation.

8. Starting from Maxwells equation prove that electromagnetic waves are transverse in nature.

Section B

Part A

Answer any **TWO** questions $(2 \times 10 = 20$ Marks$)$

9. Explain in detail the multipole expansion of charge distribution.

10. Give an account on the magnetic moment of a localized current distribution.

11. Give a necessary theory on Poynting's theorem.

12. Illustrate the necessary theory on propagation of waves in a rectangular wave guide.

Part B

Compulsory question $(1 \times 10 = 10$ Marks$)$

13. Discuss in detail about Debye shielding.

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