



K17P 1220

Reg. No. : .....

Name : .....

**Third Semester M.Sc. Degree (Supplementary)  
Examination, November 2017  
PHYSICS  
(2013 & Earlier Admissions)  
PH302 : Electrodynamics**

Time : 3 Hours

Max. Marks : 50

**SECTION – A**

Answer **any two** questions. **Each** question carries **10** marks.

1. State and explain Ampere's circuital law. Use it to calculate the field due to an infinitely long conductor.
2. Derive the Lienard- Wiechart potentials for a point charge. Express the potentials in non covariant form.
3. Discuss the Lorentz dispersion model. Explain the parameters of the equations. What is the limitation of the model ?
4. Derive the Larmor formula for the total power radiated by a non relativistic point charge. (2×10=20)

**SECTION – B**

Answer **any five** questions. **Each** question carries **3** marks.

5. What is Brewster's angle ? Explain the significance of Brewster's angle.
6. Distinguish between Lorentz gauge and Coulomb gauge.
7. Explain negative helicity of circularly polarised waves.
8. What is magnetic dipole radiation ?
9. Define Plasma oscillations and Plasma frequency. On what factors does the Plasma frequency depend ?

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10. What is Hagen Rubens relation ? Explain its importance.
11. Explain the terms four vector potential.
12. Distinguish between TE and TM mode of propagation. **(5×3=15)**

**SECTION – C**

Answer **any three** questions. **Each** question carries **5** marks.

13. Derive the transverse Plane wave solutions of Maxwell's equations in a non-conducting media.
  14. What is an electromagnetic cavity resonator ? Describe the working of a cavity magnetron.
  15. Derive an expression for the power radiated by a point charge.
  16. Explain the electromagnetic field tensor. Hence derive an expression for em field tensor.
  17. Derive an expression for the power radiated by a point charge. **(3×5=15)**
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