



0040/22

K19P 1500

Reg. No. :

Name :

I Semester M.Sc. Degree (CBSS-Reg./Suppl./Imp.)

Examination, October - 2019

(2014 Admission Onwards)

PHYSICS

PHY1C03-ELECTRODYNAMICS

Time : 3 Hours

Max. Marks : 60

SECTION-A

Answer both questions either a or b. Each question carries 12 marks.

(2×12=24)

- I. a) Discuss the motion of charged particles in uniform $E \rightarrow$ and $B \rightarrow$ fields.
(OR)
b) Explain Brewster's angle. Describe the method of determining the refractive index of a material using Brewster's angle.
- II. a) Explain Gauge transformations. Obtain the Lorentz Gauge condition.
(OR)
b) Describe radiation damping and radiation reaction. Derive the Abraham Lorentz formula.

SECTION-BAnswer any **Four** questions. Question (a) carries 1 mark, (b) carries 3 marks, (c) carries 5 marks. (4×9=36)

- III. a) What is a cavity resonator?
b) What are the applications of cavity resonators?
c) Explain the operation of a cavity resonator.



- IV. a) Define the electric scalar potential.
b) Show that the electric field generated by a stationary charge is a conservative field.
c) Explain Gauss's law in electrostatics
- V. a) What is Ampere's law?
b) Explain that you understand by magnetic monopoles.
c) Explain the law using the example of a magnetic field of current loops.
- VI. a) State Poynting's theorem.
b) What is the significance of the Poynting's vector?
c) Derive the Poynting theorem.
- VII. a) What is a Hertzian dipole?
b) Explain radiation resistance of a Hertzian dipole antenna.
c) Discuss Magnetic dipole radiation and arrive at the equation for magnetic dipole radiation.
- VIII. a) What is Tensor?
b) What is a contravariant tensor?
c) Explain the physical significance of Tensors.
-