

Roll No.

Y – 3118 (A)
M.Sc. (Physics) (Second Semester) (SPECIAL) EXAMINATION,
August 2021
(SECOND CHANCE)

Paper – 201

**CLASSICAL ELECTRODYNAMICS PLASMA AND
ANTENNAE PHYSICS**

Time : Three Hours

Maximum Marks : 85

Minimum Pass Marks : 29

Note—Attempt *all* questions.

1. What are the retarded potentials ? Derive expressions for the same and show that if the charges are stationary and currents are steady, these expressions become the solutions of Poisson equation. 17
2. (a) A particle of charge ' q ' moves in a circle of radius ' a ' at a constant angular velocity ' w '. Assume that the circle lies in the xy plane, centred at the origin and time $t = 0$, the charge is at $(a, 0)$ on the positive axis. Find the Lienard Wiechart potentials for point on the z -axis. 8½
(b) What is the physical origin of radiation reaction ? 8½
3. Describe in detail about the electron density measurement of a burning candle flame. 17
4. Explain cut-off and resonance for electromagnetic wave propagating parallel to the magnetic field. 17
5. What is a linear array ? Explain its radiation pattern. Describe multiplication of radiation pattern method for determining radiation pattern and discuss its advantages. 17