



# VP & RPTP Science College

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B.Sc. (Semester - 4) Subject: Physics Course: US04CPHY01

Title of the paper: Electrodynamics Theory and Spectroscopy

Date: 13-3-2018, Tuesday

Time: 3 pm to 4.30 pm

Total Marks: 25

## Q1 MCQs

[3]

- $\nabla^2 V = - \frac{\rho}{\epsilon_0}$  is called \_\_\_\_\_ equation.  
(a) Poisson's (b) Laplace's (c) Gauss's (d) Ampere's
- The continuity equation for steady current is given by \_\_\_\_\_.  
(a)  $\nabla \cdot \mathbf{J} = \frac{d\rho}{dt}$  (b)  $\nabla \cdot \mathbf{J} = - \frac{d\rho}{dt}$  (c)  $\nabla \cdot \mathbf{J} = \frac{d\rho}{dt}$  (d)  $\nabla \cdot \mathbf{J} = 0$
- The effect of magnetic field on the spectrum is known as \_\_\_\_\_ effect.  
(a) Zeeman (b) Stark (c) Bragg (d) Coloumb's

## Q2 Short Questions [Attempt any 2]

[4]

- What is electric flux? State Gauss's law.
- Explain magnetic vector potential.
- Compare: Normal and Anomalous Zeeman effect.

Q3 State Coulomb's law and discuss electric field in detail.

[6]

OR

Q3 Explain electric potential and give comments on the potential.

[6]

Q4 Using the Biot-Savart law, prove that the magnetic field <sup>at a</sup> distance  $s$

from a long straight wire carrying steady current  $I$  is  $B = \frac{\mu_0 I}{2\pi s}$ . [6]

OR

Q4 Compare: Magnetostatics and Electrostatics.

[6]

Q5 Describe: Investigation of spectra.

[6]

OR

Q5 Explain in short: Vector Atom Model.

[6]