

SUBJECT CODE NO: - BNP - 2684
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc (NEP) (P-2024) S.Y Sem III
Examination November / December 2025
Physics (Electricity and Magnetism)

[Time: 1:00 Hours]**[Max. Marks:30]**

Please check whether you have got the right question paper.

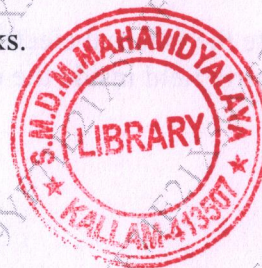
N. B

- i. Question No. 1 is multiple choice type and it is compulsory. It carries 10 marks.
- ii. Attempt any four questions from Q.2 to Q.7. Each of these question Carries 5 marks.
- iii. Figure: to the right indicate full marks.

Given: - $\epsilon_0 = 9 \times 10^9 \text{ SI}$

$$\epsilon_0 = 8.85 \times 10^{-12}$$

$$\epsilon_0 = 4\pi \times 10^{-7}$$

**Part-A****Q1 Attempt all MCQ's****10**

1. The direction of electric field due to a Positive Point charge is _____
 a) Radially inward
 b) Perpendicular to radius
 c) Circular around the charge
 d) Radially outwards
2. Two charges $+2\mu\text{C}$ and $-2\mu\text{C}$ are separated by 0.5m. What is the dipole moment?
 a) $1 \times 10^{-6} \text{ cm}$
 b) $2 \times 10^{-6} \text{ cm}$
 c) $1 \times 10^{-6} \text{ C/m}^2$
 d) $2 \times 10^{-6} \text{ C/m}^2$
3. The electric Polarization vector $\mathbf{p}$ is defined as _____
 a) Dipole moment per unit charge
 b) Dipole moment per unit volume
 c) Electric field per unit charge
 d) Charge per unit volume
4. Ampere circuital law can be applied _____ the conductor.
 a) Inside
 b) Outside
 c) Both 'a' and 'b'
 d) None of above
5. Dielectric constant of a metal is _____
 a) Zero
 b) Infinite
 c) 1
 d) 10

Part – B

- Q2** State and prove Gauss's law in electrostatics. 05
- Q3** Write short note on dielectric constant and susceptibility. 05
- Q4** Derive expression for magnetic induction inside solenoid. 05
- Q5** Two charges having magnitude $q_1 = 4 \times 10^{-6} \text{ C}$ & $q_2 = 6 \times 10^{-6} \text{ C}$ placed in an air medium exert a force of repulsion of 0.36 N on each other, find the distance between them. 05
- Q6** State and explain Ampere circuital law. 05
- Q7** Calculate the external electric field applied to a dielectric of relative permittivity $\epsilon_r = 3$ 05
The electric field inside the dielectric is $5 \times 10^{-5} \text{ v/m}$

