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SUBJECT CODE NO: - BB-2429
FACULTY OF SCIENCE AND TECHNOLOGY
B.Sc. (CBCGS) (Pattern 2022) F.Y SEM II
Examination November / December 2025
Physics Paper-V Electricity and Magnetism

[Time: 1:30 Hours]**[Max. Marks: 40]**

Please check whether you have got the right question paper.

N. B

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat diagrams and give equations wherever necessary.
4. Figures to the right indicate full marks.
5. Use of logarithmic tables and calculator is allowed.

Q1

- a. Discuss curl of a vector point function with its physical meaning.

10

OR

- b. Give the relation between the three electric vectors D, E and P.

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Q2

- a. Explain electric field due to a point charge.

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OR

- b. State and explain Biot-Savart Law.

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Q3

- a. Prove that

05

$$\vec{a} \times (\vec{b} \times \vec{c}) + \vec{b} \times (\vec{c} \times \vec{a}) + \vec{c} \times (\vec{a} \times \vec{b}) = 0$$

- b. Define and explain Polarization density vector (
- $\vec{P}$
-).

05

OR

- a. Write a note on electric potential.

05

- b. Magnetic field at a distance 2.4 cm from along straight wire is 16
- μT
- . What must be current through a wire?

05

Q4 Multiple Choice Questions

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1. Greatest space rate of change of scalar is the _____.
 a) Gradient of scalar b) Divergence of scalar
 c) Curl of scalar d) Laplacian of scalar
2. Line integral involves _____ product
 a) Vector b) Scalar c) Both (a) & (b) d) None of above
3. The SI unit of electric field is _____.
 a) $\text{N}\cdot\text{m}^2/\text{C}^2$ b) Volts c) N/C d) C/N
4. The Electrostatic force between two like charges is _____.
 a) Zero b) Infinite c) Attractive d) Repulsive

5. Electric potential is defined as:
a) Work done per unit charge b) Force per unit charge
c) Charge per unit work d) Charge per unit force
6. Value of dielectric constant (K) in air:
a) Zero b) One c) Two d) Infinity
7. Dielectrics are _____
a) Metals b) Semiconductors c) Insulating materials d) Superconductors
8. Biot-Savart Law is _____
a) Inverse Law b) Cubic Law
c) Converse Law d) Inverse Square Law
9. Magnetic field is a _____
a) Vector field b) Tensor field
c) Scalar field d) Phase field
10. _____ can be viewed as a solenoid that has been bent and closed itself:
a) A solenoid b) A toroid
c) A rectangular coil d) All of the above

