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Total No. of Pages : 02

Total No. of Questions : 09

B.Sc.(Non Medical) (Sem-2)
ELECTRICITY AND MAGNETISM
Subject Code : BSNM 204-18
M.Code : 76302
Date of Examination : 02-06-2023

Time : 3 Hrs.

Max. Marks : 50

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying ONE mark each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What is conservative field?
- b) What do you mean by curl of vector field?
- c) Comment on the direction of Poynting vector.
- d) What is reciprocity theorem of mutual induction?
- e) Two long parallel wires separated by a distance 10 cm, are each carrying a 5 A of current. Calculate force per unit length between them.
- f) Define intensity of magnetization.
- g) Write Maxwell's equations for isotropic dielectric medium.
- h) Differentiate between transverse and longitudinal nature of wave.
- i) What is Bohr magneton?
- j) Write down the expression for electrostatic energy per unit volume.

SECTION-B

2. The potential function is given by $V(x,y,z) = 4x + 3y - z$. Find the electric field vector.
3. Distinguish between para, ferro and diamagnetic substances.
4. State Poynting vector and prove Poynting theorem.
5. What is dielectric? Derive the relation between \vec{D} , \vec{E} and \vec{P} .
6. Calculate the capacitance of an isolated spherical conductor.

SECTION-C

7. a) State and explain Biot Savart's law. Derive an expression for the magnetic field at a point on the axis of a circular coil carrying current. (7)
b) Calculate magnetic field at the ends of a 35 cm long solenoid having 500 turns and carrying current of 6 A. (3)
8. State the Faraday's laws of electromagnetic induction. Derive the differential and integral form of the Faraday's law.
9. Write integral form of Maxwell's equations. Describe the physical significance of each equation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.