

Total No. of Printed Pages:2

**SUBJECT CODE NO: -BB-2310**  
**FACULTY OF SCIENCE AND TECHNOLOGY**  
**B.Sc. (CBCGS)(Pattern 2022) T.Y SEM V**  
**Examination November / December 2025**  
**Physics-XVIII Electrodynamics**

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

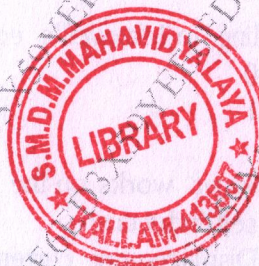
N. B

Please check whether you have got the right question paper.

1. All questions are compulsory.
2. All question carry equal marks.

Given data:

1.  $\epsilon_0 = 9 \times 10^{-12}$  SI units
2.  $c = 3 \times 10^8$  meter/sec
3.  $\mu_0 = 4\pi \times 10^{-7}$  weber / Amp.

**Q1 Solve any one****10**

- A) State Gauss's law and show that curl of electric field is zero.
- B) Obtain the energy of Electromagnetic wave and define poynting vector.

**Q2 Solve any one****10**

- A) Explain in detail self- induction and mutual induction.
- B) Obtain the expression for the coefficient of reflection and transmissim at the interface between two dielectrics.

**Q3 A) State Poisson's equation and its significance.****5**

- B) Obtain the wave equation of  $\vec{E}$  and  $\vec{B}$ .

**5****OR**

- A) When a current of 2A is supplied to a coil with 500 turns a magnetic flux of magnitude 0.2 Wb is linked with it find the self-inductance of the coil.

**5**

- B) The red light through prism is shown air on to the glass curette at an angle of  $62^\circ$  to the normal. At what angle to the normal does the light have it is in the glass? (Refractive index of our is 1 and glass is 1.6)

**5****Q4 multiple choice questions****10**

- 1) Order of Laplace's equation is \_\_\_\_\_

A) Zero

C) second

B) Third

D) first

- 2) What is the correct Statement about electric field lines?

A) They can form closed loops

B) They always originate from a negative charge

C) They never intersect

D) They terminate at infinity

3) According to Gauss's law, the net electric flux through a closed surface is proportional to \_\_\_\_\_

- A) The total charge enclosed
- B) The electric field at the surface
- C) The surface area
- D) the magnetic flux through the surface

4) According to Maxwell's equation  $\nabla \cdot D = \text{-----}$

- A) 0
- B) J
- C) 1
- D)  $\rho$

5) Transformer works on the principle of -----

- A) self-inductance
- B) mutual inductance
- C) Displacement current
- D) Both A & B.

6) The Brewster angle is also known as -----

- A) Incident angle
- B) Reflected angle
- C) Polarizing angle
- D) none of the above

7) For uniform plane wave propagating in Z- direction.

- A)  $E_x=0, H_x=0$
- B)  $E_y=0, H_y=0$
- C)  $E_z=0, H_z=0$
- D) none of the above

8) An electromagnetic wave is to pass through an interface separating two media having dielectric constants  $\epsilon_1 = 4 \epsilon_2$ , the wave will be totally neglected if angle of incidence is -----

- A)  $0^\circ$
- B)  $30^\circ$
- C)  $45^\circ$
- D)  $60^\circ$

9)  $\text{div } \vec{E} = \text{-----}$

- A) 0
- B)  $\rho / \epsilon_0$
- C)  $\rho / \epsilon$
- D)  $\epsilon / \rho$

10) If a coil is placed in a uniform magnetic field.

- A) An emf is induced in a coil.
- B) No induced emf is generated in a Coil
- C) None of above
- D) An induced current flow in a coil