

# **KATWA COLLEGE**

## **DEPARTMENT OF PHYSICS**

### **INTERNAL ASSESSMENT EXAMINATION - 2023**

**B.Sc. (H), SEMESTER: - VI,**

**PAPER:- CC - XIII (ELECTROMAGNETIC THEORY)**

**F.M: 10**

**TIME: 1 HOUR**

**❖ Answer any five from the following questions: - 5 x 2 = 10**

1. Write down the Maxwell's equation in electrostatics in free space.
2. Find out the equation of continuity from Maxwell's equation.
3. Show that for an electromagnetic wave, electric and magnetic field vectors and propagation vectors are orthogonal to each other.
4. Show that in case of propagation electromagnetic wave through linear isotropic and homogeneous medium, electric field and magnetic field have equal contribution in total electromagnetic energy of the medium.
5. What is the Poynting vector and what is its physical significance?
6. Write down the expression of linear momentum density of electromagnetic wave. What do you mean by pressure of radiation?
7. What is skin depth? Show that propagation vector is a complex quantity in case of propagation of electromagnetic wave in a conducting medium.
8. Why metals are opaque in visible region?