B.SC. DEGREE EXAMINATION,APRIL 2018
II YEAR IV SEMESTER
Core Major-Paper VIII - ELECTRICITY AND MAGNETISM

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10 marks)$

Answer any **TEN** questions

1. Define electric flux. How will you calculate same?
2. Differentiate between charge and current.
3. Give the principle of a potentiometer.
4. What is the need of calibrating electrical measuring instruments?
5. What you mean by transient currents?
6. What is time constant? Write the time constant for RC circuit.
7. Give the comparison between Peltier effect and Joule effect.
8. State the laws of thermoemf.
9. Define temperature of inversion.
10. Write the equation for magnetic induction vector.
11. What is magnetic susceptibility?
12. Define ferromagnetic domains.

Section B $(5 \times 4 = 20 marks)$

Answer any **FIVE** questions

13. State and prove Gausss law in electrostatics.
14. Explain the calibration of low range voltmeter using potentiometer.
15. Derive the expression for growth of current in a circuit containing L and R.

16. Describe the measurement of high resistance by leakage.
17. Explain the principle, construction and working of thermoelectric refrigerator.
18. Describe the determination of Peltier coefficient of a PN junction.
19. Explain the properties of paramagnetic materials.

Section C $(3 \times 10 = 30 marks)$

Answer any **THREE** questions

20. Derive the expression for electric field of a uniformly charged sphere using Gausss law and discuss all cases.
21. Describe the measurement of resistance and specific resistance of a wire using potentiometer with circuit and theory.
22. Derive the expression for growth and decay of charge in a circuit containing C and R.
23. Discuss the experimental measurement of themo emf of themo couple using potentiometer with necessary circuits
24. (a) Explain the electron theory of magnetism.
    (b) Describe about antiferromagnetic and ferromagnetic materials.