C. ABDUL HAKEEM COLLEGE (AUTONOMOUS),
MELVISHARAM - 632 509.
SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.Sc., PHYSICS **SEMESTER III**

U15MPH301 - ELECTRICITY AND MAGNETISM

Time: Three Hours Maximum: 75 Marks

SECTION - A (10 X 2 = 20 Marks)

Answer **ALL** Questions.

1. State Poisson's equation.
2. Define capacitance with its unit.
3. What is absolute capacitance?
4. Mention any two applications of potentiometer.
5. Explain Mutual induction with its unit.
6. What do you mean by eddy current?
7. Define time constant in L-R circuit.
8. What is meant by decay of charges?
9. Define magnetic permeability.
10. What are ferrimagnetic materials?

SECTION - B (5 X 5 = 25 Marks)

Answer **ALL** Questions.

11. a) Obtain the relation between electric potential and electric field in vector form.

(Or)

b) Deduce an expression for energy of a charged capacitor.

12. a) With theory, explain the calibration of high range voltmeter using potentiometer.

(Or)

b) Explain how absolute capacitance of capacitor is determined using a ballistic galvanometer.

13. a) Explain the measurement of Absolute mutual Induction by BG.

(Or)

b) State Faraday's law of electromagnetic induction.

14. a) Describe with full theory, the method of measuring a high resistance by the leakage method.

(Or)

b) Obtain an expression for the growth of charge through an LCR circuit.

15. a) Compare the different properties of dia, para and ferromagnetic materials.

(Or)

b) Explain the Langevin's theory of ferromagnetism.

SECTION - C (3 X10 = 30 Marks)

Answer **ANY THREE** Questions.

16. Explain the principle, construction and working of quadrant electrometer.
17. Explain the construction and working of moving coil Ballaistic Galvanometer.
18. Explain the principle, construction and working of Anderson's bridge for determining self inductance of a coil.
19. Obtain an expression for the decay of charge in a LCR circuit and discuss different condition.
20. Give an account of Weiss theory of ferromagnetism.

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