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Register Number:

Name of the Candidate:

B.Sc. DEGREE EXAMINATION, May 2015

(PHYSICS)

(THIRD YEAR)

PART – III

720: ELECTRICITY AND MAGNETISM

Time: Three hours Maximum: 100 marks

SECTION-A **(10× 2 = 20)**

Answer any TEN questions

1. Define electric field.
2. Obtain the relation between electric potential and electric field.
3. Define capacitance of a capacitor.
4. Define permeability.
5. What is a thermocouple?
6. What is the difference between Thomson effect and Joule heating effect?
7. What is Curie temperature?
8. What are magnetic alloys?
9. Explain the term hysteresis.
10. State the condition for a moving coil galvanometer to be ballistic.
11. Define self-inductance of a coil.
12. What is permeability of a medium?
13. Define time constant of a circuit with inductance and resistance.
14. What is Skin effect?
15. Explain the variation of current in R-C circuit.

SECTION-B **(5× 7 = 35)**

Answer ALL questions

16. a. Obtain an expression for the electric potential at any point due to point charge.

(OR)

b. Derive an expression for the capacity of a spherical capacitor.

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17. a. Explain calibration of high range voltmeter.

(OR)

b. How is thermo e.m.f. measured using a potentiometer?

18. a. Explain the electron theory of paramagnetism.

(OR)

b. Discuss the domain theory of ferromagnetism.

19. a. Obtain an expression for the force acting on a current carrying conductor in a magnetic field.

(OR)

b. Give the theory of Anderson Bridge method.

20. a. Discuss the high resistance measurement by leakage method.

(OR)

b. Write a note on power losses in a transformer.

SECTION-C **(3× 15 = 45)**

Answer any THREE questions

21. Derive an expression for the capacity of a cylindrical capacitor.

22. What is Peltier effect? Describe an experiment to determine the Pelteir co-efficient of two metals.

23. Explain in detail about the electron theory of diamagnetism.

24. Describe Owen's bridge and with the relevant theory explain the determination of the self inductance of a coil.

25. Discuss the decay of charge in a circuit containing LCR.

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