NOVEMBER/DECEMBER 2018

BEL21 — ELECTROMAGNETISM AND AC CIRCUITS

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State Lenz's law.
2. What is mutual induction?
3. What are RMS values of alternating currents?
4. What is a wattles current?
5. What is time constant?
6. What is an AC circuit?
7. What are the applications of Tesla coil?
8. What are the advantages of AC over DC?
9. What is current density?
10. What is electromagnetic induction?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Explain the mutual induction of a solenoid inductor.

Or

(b) Explain the principle of induction coil and its uses.

12. (a) Explain the determination of power factor in the case of an AC circuit containing inductance and resistance.

Or

(b) Derive an expression for EMF induced in a coil rotating in a uniform magnetic field.

13. (a) Explain the Construction and working of transformers.

Or

(b) What is Skin effect? Explain the uses of Tesla coil.

14. (a) Explain the star and delta connections.

Or

(b) Write note on types of armature winding.

15. (a) Derive an expression for current continuity equation.

Or

(b) Derive an expression for electric field strength in terms of retarded potential.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain experimental determination of self induction.

17. Derive an expression for Mean, RMS and peak values of alternating currents.

18. Derive an expression for growth and decay of current in a charge having C and R.

19. Explain the production and distribution of three phase AC.

20. Explain differential forms of Maxwell's equation.