

NOVEMBER/DECEMBER 2019

**BEL21 — ELECTROMAGNETISM AND AC
CIRCUITS**

Time : Three hours

Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define electromagnetic induction.
2. What are eddy currents?
3. Define form factor.
4. What is called choke coil?
5. Differentiate step-up and step-down transforms.
6. Mention the time constant in growth of current in circuit containing L & R.
7. What do you mean by phase?
8. Draw the circuit diagram for delta connection.
9. What is electromagnetic wave?
10. Give the equation for ampere's law in Maxwell's equations.



SECTION B — ($5 \times 5 = 25$ marks)

Answer ALL questions.

11. (a) What is meant by co-efficient of coupling?
Obtain the expression for it.

Or

- (b) Give a brief account on induction coil.

12. (a) Derive the expression for AC circuit containing C and R.

Or

- (b) Explain in detail the parallel resonant circuit.

13. (a) Elucidate the decay of charge the circuit containing C and R.

Or

- (b) Write a shot note on skin effect.

14. (a) Discuss the construction and working of AC dynamo.

Or

- (b) Elucidate the series and shunt wound dynamo.

15. (a) Derive the expression for Gauss law for electrostatics and magnetism in Maxwell's equations.

Or

Obtain the expression for an integral form of Maxwell's equations.

SECTION C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Define coefficient of self-induction of a coil. Deduce a mathematical expression for the self inductance of a solenoid.
17. Describe the AC circuit containing L, C, and R in series and explain the sharpness of resonance.
18. Explain the growth of charge a circuit containing L, C & R.
19. Discuss the production and distribution of three phase AC.
20. Derive the expression for the differential form of Maxwell's equations.

