Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 20508

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Third Semester

Electrical and Electronics Engineering

EE 8301 – ELECTRICAL MACHINES – I

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define statistically and dynamically induced emf.
2. What is eddy current losses in magnetic circuit?
3. Define voltage regulation of a Transformer.
4. Mention the different types of losses in a transformer.
5. List the types of leakage in rotating machines.
6. What is field energy? Write the equation of field energy.
7. Identify the categories of leakage flux in rotating machines.
8. Write the emf equation of a DC machine.
9. What are the advantages of swinburne's test conducted on a DC machines?
10. List five applications of DC motor.

PART B — (5 × 13 = 65 marks)

11. (a) Explain hysteresis and eddy-current losses occurring in magnetic circuits.

Or

(b) Discuss the properties of magnetic materials.

12. (a) Explain the construction and working principle of auto transformer.

Or

(b) Discuss the leakage flux in armature of a rotating machine.

13. (a) How the mmf is induced in the air gap of the distributed winding? Explain, in detail with necessary equations about (Field energy and co energy)

Or

(b) Explain with neat diagram, the magnetic field system with two electrical excitations.

14. (a) Describe with neat sketche, and working the construction of a DC machine.

Or

(b) Derive the emf equation of DC generator from the fundamental laws.

15. (a) Explain with necessary diagram the working principle of DC series motor.

Or

(b) Explain in detail the working principle of permanent magnet DC motor.

PART C — (1 × 15 = 15 marks)

16. (a) Explain with neat diagram the construction details of different types of transformer.

Or

(b) Discuss the various speed control methods of DC motor.

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