Reg. No. : ☐☐☐☐☐☐☐☐☐☐

Question Paper Code: 31303

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electronics and Communication Engineering

01UEE323 - ELECTRICAL MACHINES

(Common to Instrumentation and Control Engineering and Mechanical Engineering)

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is the necessity of starter in a D.C. motor?

2. Define armature reaction.

3. What is the function of breather in transformer?

4. Why is the rating of transformer given in KVA?

5. What happens if the air gap flux density in an Induction motor increases?

6. How the frequency of rotor emf is related to the slip in an induction motor?

7. Name the types of Alternator based on their rotor construction.

8. What is synchronous condenser?

9. How is the direction of a capacitor start Induction motor be reversed?

10. Define holding torque.

PART - B (5 x 16 = 80 Marks)

11. (a) Derive the expression for EMF induced in the DC generator. (16)

Or

(b) Discuss about the various performance characteristics of DC shunt and series motor. (16)

12. (a) Derive and explain the equivalent circuit of a transformer with neat sketch. (16)

Or

(b) Develop an equation for induced EMF in a transformer winding in terms of flux and frequency. (16)

13. (a) Explain the construction and working principle of three phase induction motor and explain how the rotating magnetic field is produced by three phase currents. (16)

Or

(b) Explain about the working of autotransformer and star-delta starter used in 3 phase induction motor. (16)

14. (a) Describe the various methods of starting the synchronous motor. (16)

Or

(b) Describe the EMF method to determine the voltage regulation of an Alternator. (16)

15. (a) Explain the principle of operation of a single phase induction motor using double field revolving theory. (16)

Or

(b) Explain the following with neat diagrams
    (i) Stepper motor. (8)
    (ii) Hysteresis motor. (8)

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