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Question Paper Code: 31347

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

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 back EMF in a D.C. motor?

2. Why is starter needed to start the DC motor?

3. What happens if DC supply is applied to the transformer?

4. Why is transformer rated in KVA?

5. Write down the condition for maximum starting torque of three phase induction motor.

6. Why an induction motor is called rotating transformer?

7. What does hunting of synchronous motor mean?

8. Define voltage regulation of an alternator.

9. What is a universal motor?

10. What are the applications of stepper motors?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the construction of DC machine in detail and derive the EMF equation of DC generator.   (16)

Or

(b) (i) With neat diagram explain the working of 3 point starter. (8)

(ii) Discuss the open circuit and load characteristics of DC shunt generator. (8)

12. (a) (i) Explain the construction details and working of core type transformer with neat sketches. (10)

(ii) Derive the EMF equation of transformer. (6)

Or

(b) Deduce the equivalent circuit of transformer starting from the basic principles. (16)

13. (a) Why starters are necessary for starting 3 phases induction motors? What are various types of starters? Explain star-delta type starter in detail. Also derive the torque equation. (16)

Or

(b) (i) Deduce and discuss the equivalent circuit of 3Φ induction motor. (8)

(ii) Explain with neat diagram, the construction details and working principle of a 3Φ induction motor. (8)

14. (a) (i) With neat sketches describe the construction and principle of operation of salient pole alternator. (8)

(ii) Derive EMF equation of an alternator. (8)

Or

(b) Describe the various staring methods of synchronous motor with relevant diagrams. (16)

15. (a) Write short notes on the following:

(i) Stepper motor principle and its types. (8)

(ii) Repulsion motor (8)

Or

(b) Explain the following with neat diagram

(i) Hysteresis motor (8)

(ii) Brushless DC motor (8)

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