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Question Paper Code: 33323

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. Define armature reaction.
2. State any two applications of D.C Shunt and Series motors.
3. What is the function of breather in transformer?
4. Why the efficiency of transformer is more than that of other rotating machines?
5. Why Number of Stator and Rotor Poles be same?
6. Why an induction motor is called rotating transformer?
7. Define voltage regulation of an alternator.
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) (i) Derive the EMF equation of a D.C. Generator. (8)
- (ii) Draw and explain about the separately excited and self excited D.C. generator and also write the relevant current and voltage equations. (8)

Or

- (b) Discuss about the various performance characteristics of DC shunt and series motor. (16)
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) Develop an equation for induced EMF in a transformer winding in terms of flux and frequency. (16)
13. (a) Explain with neat diagram, the construction details and working principle of a 3 Φ induction motor. (16)

Or

- (b) Derive an expression for the torque of an induction motor and obtain the condition for maximum torque. (16)
14. (a) Explain with a neat diagram the load characteristics of an alternator when it delivers load at unity, lagging and leading power factors. (16)

Or

- (b) (i) Explain the phenomena of hunting in synchronous motors and the methods adopted to minimize the effect of hunting. (8)
- (ii) Explain with circuit any one method of starting a three phase synchronous motor. (8)

15. (a) Explain clearly the operation of a single phase induction motor. Discuss the different starting methods of single phase induction motors. (16)

Or

- (b) Explain the following with neat diagram

(i) Hysteresis motor (8)

(ii) Brushless DC motor (8)
