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

Question Paper Code: 31045

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

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. What is the function of commutator in D.C. generator?
3. Mention the difference between core and shell type transformers?
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. What are the advantages of three phase induction motor?
7. Name the types of Alternator based on their rotor construction.
8. Why is the stator core of Alternator laminated?
9. How is the direction of a capacitor start Induction motor be reversed?
10. Define step angle in stepper motor?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Derive the expression for EMF induced in the DC generator. (10)

(ii) Derive the torque equation of a DC motor. (6)

Or

(b) With neat sketch, explain the working of three point starter for a DC motor. (16)

12. (a) Explain the construction and working principle of single phase transformer with neat diagram. (16)

Or

(b) (i) Develop an equation for induced EMF in a transformer winding in terms of flux and frequency. (10)

(ii) Explain about the various losses that occur in transformer? (6)

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) Derive an expression for the torque of an induction motor and obtain the condition for maximum torque. (16)

14. (a) (i) Derive the EMF equation of an alternator. (10)

(ii) Explain different types of Torques associated with a synchronous motor. (6)

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) (i) Explain the operation of Capacitor start induction run motor with a neat diagram. (8)

(ii) Explain the construction and working principle of Repulsion motor. (8)
