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

Question Paper Code: 41031

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

Fourth Semester

Electrical and Electronics Engineering

01UEE402 - AC MACHINES

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What is the difference between squirrel cage rotor and slip ring rotor?
2. List the various losses in an induction motor.
3. Why starter is necessary for the induction motor?
4. Define cogging.
5. Define distribution factor.
6. What is meant by armature reaction? What are the effects on the performance of an alternator?
7. Draw V curves and inverted V curves.
8. What is a synchronous condenser?
9. List the starting methods of single phase induction motor.
10. What is universal motor?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the principle of operation of a three phase induction motor. (8)

(ii) A 6 pole, three phase induction motor operates from a supply whose frequency is 50 Hz. Calculate

a. The speed at which the magnetic field of the stator is rotating (2)

b. Speed of the rotor when the slip is 0.03 (2)

c. The frequency of the currents when the slip is 0.05 (2)

d. Frequency of the rotor current at standstill (2)

Or

(b) (i) Draw the torque-slip characteristics of a three phase induction motor at different rotor resistances. (8)

(ii) Describe with neat diagram, the principle of operation of induction generator. (8)

12. (a) Describe with neat diagram, the principle and working of an Auto transformer starter in three phase induction motor. (16)

Or

(b) Explain any two speed control method of three phase induction motor. (16)

13. (a) (i) Derive a generalized expression for emf equation of an alternator. (8)

(ii) A 230V, three phase star connected alternator gives on open circuit, emf of 230V, for a field current of 0.38A.The same field current on short circuit causes an armature current of 12.5A.The armature resistance measured between two lines is 1.8 ohms. Find the regulation for the current of 10 amps at 0.8 lagging power factors. (8)

Or

(b) Explain Blondel's two reaction theory for salient pole machines. (16)

14. (a) (i) Explain the working principle and operation of synchronous motor. (8)

(ii) Explain the various methods of suppressing hunting. (8)

Or

(b) Explain the methods of starting the Synchronous motor. (16)

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

Or

(b) (i) Describe the constructional features and principle of linear induction motor. (8)

(ii) Explain the operation of a Hysteresis motor. (8)

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