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Question Paper Code: 41342

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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 application of synchronous induction motor.

3. Why starter is necessary for the induction motor?

4. Define crawling.

5. Define distribution factor.

6. Define voltage regulation and list the methods for determining voltage regulation.

7. Draw V curves and inverted V curves.

8. What is a synchronous condenser?

9. Why does single phase induction motor is not self starting?

10. What is universal motor?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) With a neat sketch explain the construction details of three phase induction motor.   (8)

    (ii) An 8 pole, 3-phase induction motor running with the slip of 4% takes 20 *KW* from a 50 *Hz* supply .Stator losses amount to 0.5 *KW*. If the mechanical torque lost in friction is 16.2 *Nm*, Find the power output and efficiency.   (8)

Or

(b) (i) Explain the torque slip characteristics of three phase induction motor. (8)

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

12. (a) Explain the star-delta and auto transformer starter with neat sketch. (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 the two reaction theory of salient pole machine and draw the phasor diagram using direct and quadrature axis impedance. (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) (i) With neat sketch explain the V curve and inverted V curve. (10)

    (ii) Explain current loci for constant power input and constant excitation. (6)

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

Or

(b) (i) Explain the working principle of single phase induction motor. (8)

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

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