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Question Paper Code: 34302

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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?
7. Define hunting.
8. A 50 kW, 400 V, three phase induction motor is operated at full load with a efficiency of 92%. If field current is adjusted to make its power factor 0.8 leading, estimate the armature current.
9. Why does single phase induction motor is not self starting?
10. Give the application of repulsion motor.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Deduce the equivalent circuit of an 3 phase induction motor. (10)
- (ii) An eight 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. (6)

Or

- (b) Draw the torque-slip characteristics of a three phase induction motor at different rotor resistances. (16)
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) Derive a generalized expression for emf equation of an alternator. (16)

Or

- (b) (i) Derive the EMF equation of an alternator. (8)
- (ii) Describe the method of synchronizing the three phase alternator to the infinite bus giving the relevant circuit diagram. (8)
14. (a) Explain the working principle and operation of synchronous motor. (16)

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) Write a short note on the following:
- (i) Reluctance motor (8)
- (ii) Hysteresis motor (8)