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Question Paper Code : 51507

B.E/B. Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fifth Semester

Electrical and Electronics Engineering

EE 2302/EE 52/EE 1301/10133 EE 505 – ELECTRICAL MACHINES – II

(Regulations 2008/2010)

(Common to PTEE 2302/10133 EE 505 – Electrical Machines II for B.E. (Part-Time)

Fourth Semester Electrical and Electronics Engineering – Regulations 2009/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define distribution factor k_d .
2. Define synchronizing torque.
3. Why the synchronous motor is not self starting ?
4. What is a synchronous condenser ?
5. What is meant by Slip in Induction motor ?
6. What is the purpose of conducting blocked rotor test ?
7. Write about the star-delta starter.
8. Define slip power.
9. Draw the no-load vector diagram for single phase induction motor.
10. Write the working principle of repulsion motor.

PART – B (5 × 16 = 80 Marks)

11. (a) In a 50 kVA star connected, 440 V, 3-phase, 50-Hz alternator, the effective armature resistance is 0.25 ohm per phase. The synchronous reactance is 3.2 ohm per phase and leakage reactance is 0.5 ohm per phase. Determine percentage regulation on full-load by E.M.F method.

OR

- (b) Explain the parallel operation of three phase alternators with a neat diagram.
12. (a) Derive the equation for the power and torque developed by the synchronous motor.

OR

- (b) Explain in detail the effect of excitation, on armature current and power factor of synchronous motor.
13. (a) Explain the construction and working principle of three phase induction motor.

OR

- (b) A 110-V, 3-phase, star-connected induction motor takes 25 A at a line voltage of 30 V with rotor locked. With this line voltage, power input to motor is 440 W and core loss is 40 W. The d.c resistance between a pair of stator terminals is 0.1 ohm. If the ratio of a.c to d.c resistance is 1.6, find the equivalent leakage reactance/phase of the motor and the stator and rotor resistance per phase.

14. (a) Discuss the following starters for three phase induction motor :
- (i) Autotransformer starter
 - (ii) Star-Delta starter

OR

- (b) Explain in detail with a neat diagram, the slip power recovery scheme.
15. (a) Explain the double field revolving theory in a single phase induction motor.

OR

- (b) Explain the working of linear induction motor and also write its applications.