Reg. No.

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.

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