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B.Tech.(Electrical & Electronics Engg.) (2013 Onwards)/

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(Sem.-4)

ELECTRICAL MACHINERY-II

Subject Code : BTEEE-401

M.Code : 72385

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

1. Answer briefly :

- (a) Define the voltage regulation of a synchronous generator.
- (b) Define Pole Pitch of the synchronous generator.
- (c) What are the advantages of brushless DC motor?
- (d) Define Hunting and oscillations in synchronous machines.
- (e) What is the purpose of starters used in three phase induction motor?
- (f) By which test synchronous reactance of synchronous machine is determined.
- (g) How can the direction of capacitor run motor be reversed?
- (h) What is meant by plugging in three phase induction motor?
- (i) In what ratio line current and starting torque is reduced with star-delta starting of three phase induction motor?
- (j) What is the specialty of universal motor?

SECTION-B

2. A 3 phase, 50 Hz, 8 pole synchronous generator has a star connected armature winding with 120 slot and 8 conductors per slot. The flux per pole is 0.05 Wb, sinusoidally distributed. Determine the phase and line voltages.
3. Explain the construction details of squirrel cage and slip ring rotor induction motor. Compare the merit and demerit of each type of motor.
4. What is infinite bus? State the characteristics of an infinite bus. What are the operating characteristics of an alternator connected to an infinite bus?
5. Draw the equivalent circuit of three phase induction motor, also explain torque slip characteristics.
6. Explain the double field revolving theory used in single phase induction motor.

SECTION-C

7. Explain the working principle of capacitor start single - phase induction motor. Why should be the auxiliary winding in a capacitor start motor be disconnected after the motor has picked up speed?
8. A 10kW, 400V, 4 pole delta connected squirrel cage induction motor gave the following test results :

No-load test : 400V, 8A, 250W

Blocked rotor test : 90V, 35A, 1350W

The dc resistance of the stator winding per phase measured immediately after the blocked rotor test is 0.6ohm. Calculate the rotational losses and the equivalent circuit parameters.
9. A 3 phase squirrel cage induction motor with an applied voltage of 40% gives a blocked rotor current of 250% and internal starting torque of 30% of their corresponding rated values. If an auto transformer limits the starting line current to 150% of the motor full load current, compute the percentage starting torque.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.