

**II B. Tech II Semester Supplementary Examinations, November - 2019****ELECTRICAL MACHINES-II**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answer **ALL** the question in **Part-A**3. Answer any **FOUR** Questions from **Part-B****PART -A**

1. a) A 3-phase, 50Hz, 4-pole induction motor has a slip of 4%. Calculate speed of the motor and frequency of rotor e.m.f. (3M)
- b) The rotor resistance and standstill reactance per phase of a 3 phase slip-ring induction motor are  $0.05\Omega$  and  $0.2\Omega$  respectively. What should be the value of external resistance per phase to be inserted in the rotor circuit to give maximum torque at starting? (3M)
- c) Discuss few differences between single phase and three phase induction motors. (2M)
- d) Define Distribution factor. (2M)
- e) What are characteristics of an infinite bus? (2M)
- f) Write any few causes of Hunting. (2M)

**PART -B**

2. a) Describe the construction of a 3-phase cage type induction motor with neat sketch. (7M)
- b) A cage induction motor when started by means of a star-delta starter takes 190% of full load line current and develops 40% of full load torque at starting. Determine the starting torque and current in terms of full load values, if an auto transformer with 80% tapping were employed. (7M)
3. a) Explain in detail about torque slip and torque speed characteristics. (7M)
- b) How the equivalent circuit parameters are obtained for an induction motor. (7M)
4. a) Discuss the modifications necessary to operate a dc series motor satisfactorily on single phase ac supply. (7M)
- b) Using double revolving field theory, explain why a single phase induction motor is not self starting. (7M)
5. a) Explain the MMF method of determining the voltage regulation of alternator. (7M)
- b) Discuss the two reaction theory applicable to salient pole synchronous machine. (7M)
6. a) How do synchronizing lamps indicate the phase variation of the incoming machine and the running machine? (7M)
- b) Discuss in detail about load sharing in parallel generators. (7M)

7. a) Explain in detail about various techniques to reduce hunting. (7M)
- b) A 3-phase synchronous motor of 8500W at 1100V has synchronous reactance of  $8\Omega$  per phase. Find the minimum current and the corresponding induced e.m.f for full load condition. The efficiency of the machine is 0.8. Neglect armature resistance. (7M)

