Course Code: 1940205 **Roll No:** **MLRS- R19**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech II Sem Regular End Examination, July 2021

Electrical Machines-II

(EEE)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	Explain with neat diagrams, the constructional details of 3-phase squirrel cage and slip-ring Induction machine.	7M	CO1	L2
	b)	A three-phase induction motor runs at almost 1198 r/min at no load and 1112 r/min at full load when supplied from a 60-Hz, three-phase source. (i) How many poles does this motor have? (ii) What is the slip in percent at full load? (iii) What is the corresponding frequency of the rotor currents? (iv) What is the corresponding speed of the rotor field with respect to the rotor? With respect to the stator?	7M	CO1	L2
2	a)	Explain the principle of operation of 3-phase Induction Machine.	7M	CO1	L2
	b)	What do you mean by asynchronous machines? Explain.	7M	CO1	L2
3	a)	Deduce the condition of 3-phase induction motor that $P_2:P_m:P_c::1:1-s:s$	7M	CO2	L3
	b)	Explain the stator side speed control methods of Induction motor. Draw the relevant speed-torque characteristics.	7M	CO2	L2
4	a)	Elaborate about the Cogging of an induction machine?	7M	CO2	L4
	b)	Explain the following terms related to a.c. windings i) single layer and double layer windings ii) full pitch and short pitch windings iii) integral slot and fractional slot windings	7M	CO3	L2
5	a)	Explain with the neat sketches the armature reaction in three phase alternators.	7M	CO3	L2
	b)	Briefly explain about the alternator voltage regulation using synchronous impedance method.	7M	CO3	L3

6	a)	Explain the step-by-step procedure for synchronizing an alternator to infinite system.	7M	CO3	L3
	b)	Explain the two-reaction theory of salient pole synchronous machine. Describe a method of determining direct and quadrature axis reactance X_d and X_q of salient pole alternator.	7M	CO4	L2
7	a)	Explain the following with the help of phasor diagrams related to a synchronous motor. i) Effect of increasing load with constant excitation ii) Effect of changing excitation at constant load.	7M	CO4	L2
	b)	Give the constructional details and working principle of capacitor start and capacitor run type single phase induction motors. Draw the relevant circuit diagrams.	7M	CO5	L2
8	a)	Explain, why single-phase induction motors are not self starting? Mention few applications of them.	7M	CO5	L2
	b)	Write short note on split-phase induction motor.	7M	CO5	L2

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