R18

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Regular Examinations October-2020
ELECTRICAL MACHINES-II
(Electrical & Electronics Engineering)

Time: 3 hours   Max. Marks: 60

PART-A
(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	A full load copper loss in a transformer is 1600 W. What will be the copper loss at half load?	**2M**
	b	Define slip in an Induction motor.	**2M**
	c	Why do you require starters for starting of three-phase induction motor?	**2M**
	d	What is meant by voltage regulation of an alternator?	**2M**
	e	Why damper bars are used in synchronous motor?	**2M**

PART-B
(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	Determine load shared by each transformer when two transformers are connected in parallel with equal voltage ratios.	**5M**
	b	A single-phase transformer has 63W core losses at 40Hz while 110W at 60Hz. Both the tests are performed at same value of maximum flux density in the core. Find hysteresis and eddy current losses at 50Hz frequency.	**5M**

OR

3	Briefly discuss various types of 3-phase transformer connections.	**10M**

UNIT-II

4	**a**	From the fundamentals, deduce a relationship between rotor power input, rotor power loss and mechanical power developed in case of Induction motor.	**5M**
	b	The useful torque of a 8-pole, 50Hz, three phase induction motor is 190N-m, the rotor frequency is 1.5Hz. Calculate the rotor copper losses if mechanical losses are 700W.	**5M**

OR

5	Explain the production of rotating magnetic field and prove that resultant flux is equal to 1.5 times of maximum flux with the help of phasor diagrams.	**10M**

UNIT-III

6	Explain how to predetermine the performance of induction motor from no-load and blocked rotor tests.	**10M**

OR

7	Explain cascade connection method of speed control of 3-phase IM with neat diagram.	**10M**

UNIT-IV

8	Explain the procedural steps to find voltage regulation of synchronous generator by Synchronous Impedance Method.	**10M**

OR

9	Draw the phasor diagram of Salient Pole Synchronous Machine and explain the concept of direct axis reactance and quadrature axis reactance.	**10M**

UNIT-V

10	Two 1-Ø alternators are operate in parallel and sharing a load impedance of (3+j4)Ω If the impedances of each machine is (0.2+j2)Ω and emf's are (200+j0)V and (220+j0)volts respectively. Determine (i) Terminal voltage (ii)) Current (iii) Power factor(iv) Output power of each machine (v) Bus-bar voltage	**10M**

OR

11	Explain in detail about 'V' and 'Λ'curves of a synchronous motor.	**10M**

END