Q.P. Code: 16EE215 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations Dec 2019

ELECTRICAL MACHINES - II

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	Derive an e. m. f. equation of a transformer	**8M**
	b	A 10KVA, 2200/400V transformer has R1=5 Ω, X1=12 Ω, R2=0.2 Ω and X2=0.48 Ω. Determine the equivalent impedance of the transformer referred to (i) Primary side (ii) Secondary side.	**4M**

OR

2	**a**	Write short notes on Losses, Efficiency and Regulation	**7M**
	b	Explain the effect of variations of frequency and supply voltage on iron losses.	**5M**

UNIT-II

3	**a**	A 2 kVA, 115/230 V, 50HZ transformer gave the following test results: Short-circuit test: 13 V, 8.7 A, 100 W Open circuit test : 115 V, 1.1 A, 50 W Calculate the voltage regulation and efficiency at full load at 0.8 p.f lagging.	**6M**
	b	With neat diagram explain the procedure for conducting Sumpner's test.	**6M**

OR

4	**a**	Describe the Parallel operation of transformers with equal voltage ratios.	**6M**
	b	Compare a Two-winding transformer with Auto transformer in detail.	**6M**

UNIT-III

5	**a**	Draw and explain Y- Y & Δ-Δ Connection diagram of three-phase transformer.	**7M**
	b	With neat diagram explain about the Scot connection of a transformer.	**5M**

OR

6	**a**	Explain the constructional details of cage and wound rotor induction machines.	**7M**
	b	A Three phase induction motor is wound for 4 poles and is supplied from 50 HZ System. Calculate (i) synchronous speed (ii) speed of the motor when slip is 4% and (iii) Rotor current frequency when the motor runs at 600rpm.	**5M**

UNIT-IV

7	**a**	A 6-pole, 50Hz, 3-phase induction motor running on full load develops a useful torque of 160 N-m and the rotor emf is absorbed to make 120 cycles/min. Calculate the net mechanical power developed .if the torque loss in windage and friction is 12N-m. Find the copper loss in the rotor windings, the input to the motor and effciency. Stator losses=200W (inclusive of core loss).	**7M**
	b	Explain the Torque-Slip characteristics of an 3-phase Induction motor	**5M**

OR

8	**a**	Briefly explain about the procedure for circle diagram.	**6M**
	b	Explain in detail about the no load test of 3-phase induction motor.	**6M**

UNIT-V

9	**a**	Briefly explain the working of star delta starter with a neat diagram	**6M**
	b	Explain the V/f control methods of the speed control of induction motor are achieved from stator side.	**6M**

OR

10 a Explain how the speed of induction motor is controlled by injecting emf into the rotor Circuit. **6M**

b A cascaded set consists of 2 motors 4-pole and 6-poles respectively. The Supply frequency is 50 Hz, While the frequency in rotor circuit of 6 pole motor is 1Hz. Determine the slip of each machine and combined speed of the set. **6M**

*** END ***