Q.P. Code: 16EE211 **R16**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations Nov/Dec 2019

ELECTRICAL MACHINES –I

(Electrical & Electronics Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1		Derive the expression for force of a singly excited toroid in a magnetic field system.	**12M**
		OR	
2		Explain torque in a singly excited system in magnetic system	**12M**

UNIT-II

3	**a**	Explain different types of armature windings?	**6M**
	b	Calculate the e.m.f. of a 4- pole wave wound generator having 45 slots with 18 conductors per slot at 1200 r.p.m. The flux per pole is 0.016 Wb.	**6M**
		OR	
4	**a**	How demagnetizing and cross magnetizing ampere turns per pole are calculated in a DC Machine.	**6M**
	b	The brushes of a certain lap connected 400kw, 6-pole generator are given a lead of 18^o electrical. From the data given, calculate (i) the demagnetizing ampere-turns (ii) the cross-magnetizing ampere-turns (iii) series turns required to balance the demagnetizing component. The full load current is 750A and total number of conductors is 900 and the leakage coefficient is 1.4.	**6M**

UNIT-III

5	**a**	What are the causes for the failure of self-excitation?	**6M**
	b	Write the remedial measures for the failure of self-excitation.	**6M**
		OR	
6	**a**	Explain the parallel operation of two DC series generators with equalizer bar connection.	**6M**
	b	A 20KW, 200V DC Shunt Generator has an armature resistance of 0.05Ω and shunt field resistance of 200Ω. Calculate the power developed in the armature when it delivers rated output.	**6M**

UNIT-IV

7		Explain the principle of operation of a D.C motor. Derive the equation for the torque Developed by a D.C. motor?	**12M**
		OR	
8		Explain the armature voltage and field flux control methods for the Speed control of a DC Motor.	**12M**

UNIT-V

9		Explain Swinburne's test on DC machines? What are its advantages and disadvantages?	**12M**
		OR	
10		Describe separation of stray losses in a DC motor test in detail.	**12M**

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