Q.P. Code: 19EE2113 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year II Semester Regular Examinations October-2020

DIGITAL CONTROL OF POWER ELECTRONIC AND DRIVE SYSTEMS

(POWER ELECTRONICS)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	Explain induction motor characteristics in field weakening regions.	**6M**
	b	Explain torque production in an induction motor?	**6M**
		OR	
2	**a**	Explain induction motor characteristics in constant torque regions.	**6M**
	b	Explain the construction and principle of operation of induction machine.	**6M**

UNIT-II

3	**a**	Explain the efficiency optimization control by flux program?	**6M**
	b	Explain Volts/Hz control of Current-fed inverter drive for induction motor?	**6M**
		OR	
4	**a**	Explain in detail Speed and flux control in Current-Fed inverter drive for Induction motor drive?	**6M**
	b	Derive the relationship between voltage and frequency in case of constant V/f controlled IM.	**6M**

UNIT-III

5	**a**	Differentiate between sinusoidal PM machines and trapezoidal PM machines.	**6M**
	b	Draw and explain the characteristics of salient pole Synchronous Motor.	**6M**
		OR	
6	**a**	Explain with relevant circuit diagram for different modes the operation of static scherbius drive.	**6M**
	b	Draw and explain the speed-torque characteristics of static Kramer drive.	**6M**

UNIT-IV

7	**a**	Explain the different control techniques of the SRM drives briefly.	**6M**
	b	Explain torque Production in the variable reluctance motor.	**6M**
		OR	
8	**a**	Explain current vector control of synchronous reluctance drives.	**6M**
	b	Explain maximum power factor control for SRM drive.	**6M**

UNIT-V

9	**a**	Determine the maximum speed of the PMSM drive system.	**6M**
	b	Explain the control strategies of PMSM at Zero direct axis current control.	**6M**
		OR	
10	**a**	Explain the half wave operator of PM brushless DC Motor with the split-supply Controller.	**6M**
	b	Explain the merits and demerits of the PM Brushless DC Motor?	**6M**

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