Reg. No.															

Question Paper Code	13688

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

M.E. - Power Electronics and Drives

24PPEPC201 - SOLID STATE AC DRIVES

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Name the effect of slip on rotor of an Induction Motor.	2	K1	CO1
2.	What do you mean by variable voltage control?	2	K1	CO1
3.	List the advantages of PWM based Inverter.	2	K1	CO2
4.	Compare VSI and CSI.	2	K2	CO2
5.	What is meant by modified Kramers Drive?	2	K1	CO3
6.	Why injection of emf is not possible in squirrel cage IM?	2	K1	CO3
7.	Compare vector control and scalar control.	2	K2	CO4
8.	Explain flux vector estimation method.	2	K2	CO4
9.	What is known as lead angle?	2	K1	CO5
10.	List the 2 types of rotor in synchronous motor.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain the variable frequency control.	13	K2	CO1
		OR			
	b)	Extend the equivalent circuit of an Induction Motor starting from the basic principle.	13	K2	CO1
12.	a)	Illustrate the Speed Control of six step inverter fed Induction Motor.	13	K2	CO2
		OR			
	b)	Explain about closed loop controlled drive using CSI and mention its advantages.	13	K2	CO2
13.	a)	Illustrate the Static Scherbius System with a neat diagram.	13	K2	CO3
		OR			
	b)	Summarize the static rotor resistor control of induction motor.	13	K2	CO3

14.	a)	Explain with necessary equations, how the DTC is implemented in an induction motor.	*13*	*K2*	*CO4*
		OR			
	b)	Compare and contrast FOC and DTC.	*13*	*K2*	*CO4*
15.	a)	Explain the following with respect to synchronous motor (i) V-curves (ii) Brushless excitation	*13*	*K2*	*CO5*
		OR			
	b)	Explain the construction and operation of brushless synchronous motor.	*13*	*K2*	*CO5*

PART - C (1 × 15 = 15 Marks)

16.	a) (i)	Extend the direct method of vector control of IM.	*8*	*K2*	*CO4*
	(ii)	Explain the braking methods of synchronous motor.	*7*	*K2*	*CO5*
		OR			
	b) (i)	Compare the vector and scalar control methods.	*7*	*K2*	*CO4*
	(ii)	Summarize the Separate control mode of synchronous motor.	*8*	*K2*	*CO5*