B.E./ELX/Sem-VIII/CBCGS/R-19/'C' Scheme/Sub:-APE/8.H.2024
Date:- 04/12/2024
QP. Code:- 1006546O

Time: 3 hours **Max. Marks: 80**

N.B. (1) Question no.1 is compulsory.
(2) Attempt any three questions from the remaining five questions.
(3) Assume suitable additional data if required.
(4) All questions carry equal marks.

1		Answer **any four** of the following.	
	a	Outline the goal of the EMC test. State the EMC issues and state how those issues are resolved.	5
	b	Compare 120 degree and 180 degree conduction modes in bridge inverters.	5
	c	What are the advantages of SVM over the conventional sine wave PWM? Explain.	5
	d	Describe the methods for PI control for AC-DC converters.	5
	e	Differentiate between microgrid and smart grid.	5
2	a	Explain the working of 3 phase full wave-controlled rectifiers with R load for angle of 60 degree.	10
	b	Draw and explain speed torque curves for an AC motor and derive the equation for torque.	10
3	a	Explain 180-degree conduction mode in three phase VSI.	10
	b	Explain SVM inverter with waveforms.	10
4	a	Derive the state space averaged model for a DC –DC buck converter and hence obtain the steady state transfer function, Vo/Vin	10
	b	Explain anti saturation protection circuit for IGBT.	10
5	a	Derive the FOH and SOH model for AC-AC converter.	10
	b	Explain Slip power recovery schemes.	10
6		Write short note on (Any two):	
	a	Applications of Induction heating in power electronics	10
	b	Inverter interfacing control strategies for transferring solar energy to grid.	10
	c	Distributed energy sources	
	d	Electric braking of DC motors	

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