Reg. No.											

Question Paper Code	11518

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022
Sixth Semester
Electrical and Electronics Engineering
EE8005 - SPECIAL ELECTRICAL MACHINES
(Regulations 2017)

Duration: 3 Hours   Max. Marks: 100

PART - A (10 × 2 = 20 Marks)
Answer ALL Questions

		Marks, K-Level, CO
1.	What are the different modes of Excitation in a stepper motor?	2,K1,CO1
2.	Define step angle. Calculate step angle for a hybrid stepper motor if no of rotor teeth per end cap is 15 and no of stator poles is 4 and no of teeth per stator pole is 3.	2,K1,CO1
3.	Illustrate the circuit diagram for the C – dump circuit for SRM.	2,K1,CO2
4.	Namethe different power controllers used for the control of switched reluctance motor.?	2,K1,CO2
5.	What are the merits of the brushless DC motor drives?	2,K1,CO3
6.	What is permanence coefficient (PC)? What is the role of PC?	2,K1,CO3
7.	List the types of PMSM.	2,K1,CO4
8.	Find the expression for self and synchronous reactance of PMSM.	2,K1,CO4
9.	What are the advantages of increasing L_d / L_q ratio in Synchronous Reluctance Motor?	2,K1,CO5
10.	Recall the types of Synchronous Reluctance Motor.	2,K1,CO5

PART - B (5 × 13 = 65 Marks)
Answer ALL Questions

11.	a)	Explain the concept of lead angle in closed loop stepper motor.	13,K2,CO1
		OR	
	b)	With a neat block diagram explain the microprocessor based stepper motor control.	13,K2,CO1

12.	a)	What are the two types of current control techniques for SRM? Explain each method with neat diagrams and waveforms.	13,K2,CO2
		OR	
	b)	Describe the closed loop control analysis of switched reluctance motor.	13,K2,CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   **11518**

13. a) Describe from the basic concepts to derive the EMF equation PMBL square wave motor. 13,K2,CO3

    OR

    b) Compare Electronic and Mechanical Commutator in detail and Explain the construction of PMBLDC. 13,K2,CO3

14. a) With a neat sketch, explain the construction of the sine wave PMSM motor. Also explain the different types of rotor. 13,K2,CO4

    OR

    b) Compare PMBLDC motor and PMSM motor based on their performance parameters. 13,K2,CO4

15. a) Explain the constructional details and working principle of synchronous reluctance motor with neat diagrams. 13,K2,CO5

    OR

    b) Explain the torque speed characteristics of Synchronous reluctance motor. Mention its applications. 13,K2,CO5

PART - C (1 × 15 = 15 Marks)

16. a) With a neat diagram, explain the construction and working principle and also its characteristics of Linear induction motor. 15,K2,CO6

    OR

    b) Explain about the construction and working principle of the repulsion motor. 15,K2,CO6