

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Third Semester****Electrical and Electronics Engineering****UEET24303 – ELECTRICAL MACHINES-I****Regulations - 2024****Duration : 3 Hrs****Maximum : 100 Marks****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	State Faradays Law of Electromagnetic Induction.	L1	1	2
2.	Define leakage coefficient in magnetic circuit.	L1	1	2
3.	What is the purpose of commutator in DC generator?	L2	2	2
4.	Mention the conditions for connecting DC generators in parallel.	L2	2	2
5.	What is the significance of back EMF in a DC Motor?	L2	3	2
6.	What is the condition for maximum efficiency in a DC motor?	L1	3	2
7.	Why is the transformer rating expressed in kVA rather than kW?	L2	4	2
8.	Define all day efficiency of a single-phase transformer.	L1	4	2
9.	Mention the advantages of auto transformer and its applications.	L2	5	2
10.	Mention the types of connections employed in the three-phase transformers.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	A coil is wound uniformly with 350 turns over a steel ring of relative permeability 1000 having a mean circumference of 40 cm and a cross sectional area of 5 cm ² . If the coil has a resistance of 110 Ω and connected to 240 V DC supply, calculate the (i) coil mmf (ii) the field strength (iii) the coil flux (iv) reluctance of the ring.	L3	1	16
	Or			
b	Differentiate statistically and dynamically induced EMF. Also, explain its concepts with suitable example.	L3	1	16
12. a	For the given the construction details and load conditions of various DC generators, calculate and compare the generated EMF and armature current for each type with neat circuit diagram.	L3	2	16
	Or			
b i	Explain in detail the concept of Armature Reaction and the methods to overcome it.	L3	2	8
ii	A 10 pole DC Shunt Generator with 800 wave connected conductors are running at 600 rpm, supplies a load of 15 Ω resistance at a terminal voltage of 240 V. The armature resistance is 0.28 Ω and field resistance is 240 Ω. Determine the armature current, induced EMF and flux per pole.	L3	2	8

13.	a	Draw the schematic diagram of 3-point starter and explain its features and working.	L2	3	16
		Or			
	b	Explain about the Hopkinson test of a DC motor to find stray losses. Also, mention its merits over the load test.	L2	3	16
14.	a	With neat circuit diagram, explain how the equivalent circuit parameters of a single-phase transformer are obtained by conducting open and short circuit test.	L2	4	16
		Or			
	b	Explain the Sumpner's test for transformer with neat circuit. Mention its features and merits.	L2	4	16
15.	a	Explain the construction and working principle of an auto-transformer. Compare it with the two-winding transformer.	L4	5	16
		Or			
	b	Explain the various types of Three-phase transformer connections and compare their features based on the applications.	L4	5	16
