

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Third Semester****Electrical and Electronics Engineering****EE3303 - ELECTRICAL MACHINES-I****Regulations - 2021****Duration : 3 Hrs****Maximum : 100 Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	Give the Expression for Hysteresis losses and Eddy current Losses.	L1	1	2
2.	Distinguish between statically and dynamically induced emf.	L2	1	2
3.	Write the EMF equation of DC generator.	L1	2	2
4.	List the Types of DC generators	L1	2	2
5.	Why starter is required for DC motor.	L1	3	2
6.	Write the applications of DC series motor.	L1	3	2
7.	State the purpose of the laminating the core in transformers.	L1	4	2
8.	Full load copper loss in a transformer is 1600 W, what will be the loss at half load?	L3	4	2
9.	Compare one winding transformer and two-winding transformer.	L2	5	2
10.	State the applications of Scott connection in three-phase transformers.	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11. a	Derive the expression field energy, co energy and force for a doubly-excited magnetic systems.	L2	1	16
Or				
b	Explain briefly production of Rotating Magnetic field in rotating machines. Describe the concept of saturation and leakage fluxes.	L2	1	16
12. a	Interpret the methods to overcome the adverse effect of the armature reaction in DC generators?	L5	2	16
Or				
b	A 4 pole DC shunt generator, with a shunt field resistance of 100 ohm and an armature resistance of 1 ohm, has 378 wave connected conductors. A load resistance of 10 ohm is connected across the armature terminals of 200 V and the generator is driven at 1000 rpm. Determine power absorbed by the load.	L5	2	16
13. a	Explain the various speed control methods of DC shunt motor?	L3	3	16
Or				
b i	Derive the torque equation of DC Motor	L3	3	8
ii	A 4 pole lap connected DC shunt motor with 288 conductors takes an armature current of 6 A. The flux per pole is 20 mWb. Calculate the gross torque developed by the motor.	L3	3	8
14. a	Develop the equivalent circuit of a single-phase transformer referred to primary and secondary.	L6	4	16

Or

	b	Develop the phasor diagram of transformer when it is operating under load.	L6	4	16
15.	a	Simplify that the amount of copper saved in auto transformer is $(1-K)$ times that of ordinary transformer.	L4	5	16
		Or			
	b	With the help of phasor diagram analyse how 2-phase supply can be obtained from 3-phase supply using scott connection.	L4	5	16