ELECTRICAL TECHNOLOGY (19AES02031)

(Electronics & Communication Engineering)

Time: 3 Hours | Max Marks: 70

PART-A (10*2= 20 M)

		Answer the following	UNIT	Marks
1	a)	What is the function of Yoke & Commutator in DC Generator?	I	2
	b)	Write the EMF equation of DC Generator	I	2
	c)	What is the purpose of Swinburne's test?	II	2
	d)	What are application of DC motors?	II	2
	e)	Draw the phasor of practical transformer on load with leading power factor load	III	2
	f)	What is the relation between line and phase current in Delta connected system?	III	2
	g)	Mention starting methods of 3-phase induction motor	IV	2
	h)	What is slip? How is Rotor EMF affected by it?	IV	2
	i)	Mention the difference between Alternator and DC Generator	V	2
	j)	Why Synchronous motor is not self-starting?	V	2

PART-B (5*10= 50 M)

Answer One Full Question from each unit; All questions carry EQUAL marks.

	UNIT-I	
2	Explain the construction details of DC Generator. Mention the function of each part of DC Generator.	10 M

(OR)

3	Explain the internal & external characteristics of DC shunt generator. Why does the characteristics turn back after full load?	10 M

	UNIT-II	
4	"Back EMF in DC motor automatically regulates the flow of armature current to meet the load requirement". Justify	10 M

(OR)

5	A 25kW, 250V DC shunt generator has armature and field resistance of 0.06 ohms and 100 ohms respectively. Determine total armature power developed when working as (i)Generator delivering 25kW output (ii)Motor taking 25kW.	10 M

	UNIT-III	
6	A 10 kVA, 450/120 V, transformer is tested for efficiency and regulation and following results are obtained. O.C test: 120 V, 4.2A, 80 W S.C test: 9.65 V, 22.2 A, 120 W Determine (i) Equivalent circuit constants (ii) Efficiency for Full load at 0.8 p.f lagging (iii) Regulation of transformer at 0.8 pf lagging at full load. (iv) Efficiency at half load at 0.8 p.f lagging. (v) Regulation of transformer at 0.8 pf lagging at half load.	**10 M**

(OR)

7	Derive the relation between line and phase values of currents and voltages in both star & delta connected systems.	**10 M**

	UNIT-IV	
8	Explain various losses that occur in 3-phase Induction motors. Also explain how efficiency is determined.	**10 M**

(OR)

9	Derive the torque equation of 3-phase Induction motor. Also explain Torque-slip characteristics.	**10 M**

	UNIT-V	
10	Explain the procedure to find Voltage Regulation by Synchronous Impedance method.	**10 M**

(OR)

11	Why Synchronous motors are not self-starting? Explain the principle of operation of Synchronous motors.	**10 M**