Enrollment No:	Exam Seat No:
----------------	---------------

C. U. SHAH UNIVERSITY Summer Examination-2022

Subject Name: Electrical Machine -I

Subject Code: 4TE03EMC1 Branch: B.Tech (Electrical)

Semester: 3 Date: 27/04/2022 Time: 02:30 To 05:30 Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1		Attempt the following questions:	(14)
	a)	Swinburne test is conducted under which of the following condition? (a)no load (b)full load (c)half load (d)any of the above	(1)
	b)	The noise produced by a transformer is termed as (a) zoom (b) hum (c) ringing (d) buzz	(1)
	c)	The commercial efficiency of a shunt generator is maximum when its Variable losses equallosses. (a) Constant (b) Stray (c) Iron (d) Friction and windage	(1)
	d)	• •	(1)
	e)	Rotating part of DC motor is known as (a)Pole. (b) Carbon brush. (c) Armature. (d)Starter.	(1)
	f)	At stand still condition the value of slip is (a)1	(1)



		(b)0	
		(c)infinite value	
		(d)finite value	
	g)	Which of the following motors is/are widely used?	(1)
	O,	(a)squirrel cage induction motor	. ,
		(b)slip ring induction motor	
		(c)either of these	
		(d)none of the above	
	h)	The critical resistance of the d.c. generator is resistance of	(1)
	,	(a) Armature	()
		(b) Load	
		(c) Field	
		(d) brushes	
	i)	Power transformers are designed to have maximum efficiency at	(1)
	,	(a) nearly full load	()
		(b) 70% full load	
		(c) 50% full load	
		(d) no load	
	.j)	The direction of rotation for a DC series motor may be reversed by	(1)
	•	interchanging only the field leads.	. ,
		(a)True	
		(b)False	
	k)	Give name of different test on transformer.	(1)
	1)	Explain the function of yoke.	(1)
	m)	Explain the function of commutator.	(1)
	n)	How may the direction of rotation of a d.c. motor be reversed?	(1)
Atter	npt any	four questions from Q-2 to Q-8	
			(4 A)
Q-2		Attempt all questions	(14)
	(a)	Explain different types of D.C. generator.	(7)
	(b)	Explain in detail armature reaction in dc machines.	(7)
Ω		Attempt all questions	(14)
Q-3	(a)	Attempt all questions Derive emf equation of single phase transformer.	(14)
	(a) (b)	Explain open circuit and short circuit test on transformer with suitable	(7) (7)
	(D)	diagram.	(1)
		ulagram.	
Q-4		Attempt all questions	(14)
ν.	(a)	Explain the Speed control of D.C. Shunt Motor.	(7)
	(b)	Explain construction of three phase induction motor.	(7)
	(,-)		(-)
Q-5		Attempt all questions	(14)
Q v	(a)	Write the Equivalent circuit of a Poly phase Induction Machine with help	(7)
	(4)	of sketch.	(-)
	(b)	Explain Swinburne's test to find the efficiency of a d. c. motor.	(7)
	(~)	r a manufacture of the state of	(*)
Q-6		Attempt all questions	(14)
-	(a)	A long shunt compound generator delivers a load current of 50A at 500V	(7)
	-	and has Armature, series field and shunt field resistances of 0.05 ohm,	



		0.03 ohm, 250 ohm respectively. Calculate the generated voltage and armature current.	
	(b)	Write short note on Auto Transformer with advantage and application.	(7)
Q-7		Attempt all questions	(14)
	(a)	Derive the expression for the torque developed in d.c. motor	(7)
	(b)	Define the term "slip" of induction motor. Draw and Explain the torque- slip characteristics of a three phase induction motor.	(7)
Q-8		Attempt all questions	(14)
	(a)	Explain the operation of transformer on load and no load with vector diagram.	(7)
	(b)	Explain the Production of Rotating field of 3 Phase Supply for Induction Motor.	(7)

