(b)

C. U. SHAH UNIVERSITY Winter Examination-2019

Subject Name : Electrical Machine Design-I

Subject Code : 4TE07EMD1		Branch: B.Tech (Electrical)		
Semester: 7	Date : 15/11/2019	Time : 10:30 To 01:30	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 a)	Attempt the following questions: Energy Density in the Electromagne (40 J/m ³ , 1MJ/m ³)	tic machine design is of the or	(14) rder of	
,	The material is a better cond	· · · · · · · · · · · · · · · · · · ·		
c)	The material is used for ins Porcelain/Plastic/Wood)	ulator of transmission line. (
d)	For the design of electrical machines (Electrostatic/Electromagnetic)	design is preferred.		
e)	Low speed machines are characteriz		ll axial	
f)	length. The above statement is (True The heat conducted by ordinary lam (Radiation/Conduction)			
g)			ture up	
h)	Define specific electric loading.			
i)	The insulating material used for coo (Oil/ DM Water/Hydrogen) Select th	•		
j)	Mumetal and Perm alloy finds its ap Power Transformer/Instrument Tran		chines/	
k)	The 'at' for magnetic materials mean unit length)	· · · · · · · · · · · · · · · · · · ·	nf per	
l)	State the name of various parts of d.			
) State the name of various parts of tra			
	Define the term front pitch and back	c pitch for D.C. armature wind	ling.	
Attempt any four questions from Q-2 to Q-8				
Q-2 (a)	Attempt all questions Write short note on insulating mater	ials used for electrical machin	(14) es with (7)	

its temperature range. Draw the sketch of leakage flux for various conditions.



Page **1** of **2**

(7)

Q-3	(a) (b)	Attempt all questions How can one identify the electrical machines by observations? Write short note on C.R.G.O. steel.	(14) (7) (7)
Q-4		Attempt all questions	(14)
	(a)	Design a lap winding for 24 slot, 4 pole d.c. armature with 24 commutator segments. Write winding table.	(10)
	(b)	List the various types of stampings used for transformer design. Draw its sketch.	(4)
Q-5		Attempt all questions	(14)
	(a)	Design a 2 layer Wave winding with 30 conductors and 4 pole. Write winding table.	(10)
	(b)	Explain the difference between Conduction, Convection and Radiation by suitable example.	(4)
Q-6		Attempt all questions	(14)
C	(a)	List the various types of winding used for transformer. Explain any one of it.	(7)
	(b)	What is field form? Draw and explain Carter's Fringe Curves.	(7)
Q-7		Attempt all questions	(14)
-	(a)	Derive the output equation of d.c. machines in terms of physical dimension D(Diameter) and L(Axial Length)	(7)
	(b)	List the various factors affecting design of d.c.machines. Explain any one of it.	
Q-8		Attempt all questions	(14)
-	(a) (b)	Explain any one method of forced cooling for transformer. Discuss various factors affecting window design and yoke design of	(7)

transformer.

