Enrolment No._____

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GUJAKAT TECHNOLOGICAL UNIVERSITY			
C -1	• 4	BE - SEMESTER-IV (NEW) - EXAMINATION – SUMMER 2017	
Subject Code: 214240/ Date: 06/06/201			0/201/
Subject Name: Electrical Machines & Measurement			
Time: 10:30 AM to 01:00 PM Total Marks: 70			
Instr	uctio	ns:	
	1. 2.	Attempt an questions. Make suitable assumptions wherever necessary.	
	3.	Figures to the right indicate full marks.	
			MARKS
0.1			14
Q.1	1	Short Questions	14
	1	A current transformer is never operated withsecondary.	
	2	I he area of hysteresis loop represents	
	3	winding.	
	4	The resistance of the shunt field winding (R_{sh}) is always	
	5	Define dissipation factor.	
	6	Define phase angle error.	
	7	Starter is basically a connected in series with the motor	
	0	armature.	
	8	What is Ratio Correction Factor (RCF)?	
	9 10	Brushes are made of They are in shape	
	10	Drushes are made or They arein shape.	
	11	For the measurement of dielectric loss and power factor	
	10	bridge is used.	
	12	Define Resolution	
	13 14	The torque produced by a motor is proportional to	
02	(a)	State the function of following parts:	03
~· =	(u)	(i) Commutator (ii) Pole Shoe (iii) Field winding.	00
	(b)	Explain the term 'Back emf' and its significance.	04
	(c)	Why are we connecting two transformers in parallel? What are the	07
		conditions to operate two transformers in parallel?	
		OR	~ -
	(c)	Explain basic principal of power factor measurement and Moving Iron type power factor meter.	07
Q.3	(a)	Why wave winding is useful for high voltage low current machines?	03
	(b)	Explain Construction of d.c. machine.	04
	(c)	Derive e.m.f equation for D.C. Generator. Which factors affect its magnitude?	07
0.5		OR	
Q.3	(a)	What are multipliers? State its applications.	03
	(D) (a)	Explain the phenomena of armature reaction in d.c. machine.	04 07
	(0)	diagrams for no-load and load conditions	07
0.4	(a)	List out important features of Power Analyzer.	03
<u>ر</u>	(b)	What is open delta or V-V connection? Why it is used?	04

(b) What is open delta or V-V connection? Why it is used?

(c) A 20 kVA, 1000/250 V, 50 Hz single phase transformer gave following 07 test results:
O.C. test (With L.V. open) : 1000 V, 2 A, 250 W.
S.C. test (With H.V. shorted): 5 V, 50 A, 200 W.
Calculate percentage regulation and efficiency at half load 0.8 p.f. lagging.

OR

Q.4 (a) Define the following terms:

(i) Precision (ii) Reproducibility (iii) Deflection Factor.

- (b) Which are the different types of errors occurs in measurement? Explain 04 it.
- (c) A 8-pole armature has 96 slots with 8 conductors per slot. It is driven at 600 r.p.m. The useful flux per pole is 10 mWb. Calculate the induced e.m.f. in armature winding when it is : (a) lap connected (b) wave connected.
- Q.5 (a) List out different techniques used for high resistance measurement.
 - (b) What is standard of measurement? Describe various standards of 04 measurements.
 - (c) Explain the working of a digital multimeter with a schematic block 07 diagram.

OR

- Q.5 (a) Explain how digital frequency counter is used to measure, (i) Frequency 03 (ii) Period (iii) Time interval.
 - (b) How the range of d.c. voltmeter can be extended? Derive the expressions 04 to calculate multiplier resistance.
 - (c) Explain measurement of inductance with the help of Hay's Bridge. Write 07 advantages and disadvantages of Hay's Bridge.

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