Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III(New) • EXAMINATION – WINTER 2016

Subject Code:2130105 **Date:06/01/2017**

Subject Name:Electrical Machines & Electronics

Time:10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1		**Short Questions**	**14**
	1	In which type of winding equalizer rings are used?	
	2	What is the main function of inter poles?	
	3	Name the methods to improve commutation.	
	4	Define slip in induction motor.	
	5	What is distribution factor of an alternator?	
	6	What is the transformation ratio of the transformer?	
	7	What is the function of the breather?	
	8	What is most economical power factor?	
	9	What is relation between transmission voltage and conductor diameter?	
	10	Define Kelvin's law.	
	11	$(\bar{A} \cdot A) + A =?$	
	12	What is the size of the address bus of 8085 microprocessor? How many memory locations it can locate?	
	13	What is the value of cut-in voltage of germanium based diode?	
	14	Draw the symbol and truth table of NOT gate.	
Q.2	**(a)**	Draw the Torque-Armature current, Speed-Armature current and Speed-Torque Characteristics of D.C. series motor.	**03**
	(b)	Draw and explain internal and external characteristics of separately excited D.C. generator.	**04**
	(c)	Explain the double field revolving theory.	**07**
		OR	
	(c)	Draw and explain four-point starter of D.C. shunt motor.	**07**
Q.3	**(a)**	Draw the Speed-Torque characteristics of universal motor. Also give its applications.	**03**
	(b)	Explain the speed control method of D.C. shunt motor using flux control method.	**04**
	(c)	What is a tariff? Explain the types of tariff.	**07**
		OR	
Q.3	**(a)**	Draw the star-delta starter for the starting of 3-phase Induction motor.	**03**
	(b)	Derive Torque equation of D.C. motor.	**04**
	(c)	Compare between Indoor and Outdoor substations.	**07**
Q.4	**(a)**	Describe MOV, MVI and IN instructions of 8085.	**03**
	(b)	Write the conditions for parallel operation of alternator.	**04**
	(c)	What is Power Factor? Discuss the effect of low power factor and mention their methods of improvement.	**07**
		OR	
Q.4	**(a)**	Draw the symbol and truth table of AND, OR and NOT gates.	**03**
	(b)	Draw the shell type, core type and berry type transformers.	**04**

	(c)	Give comparison between A.C and D.C power transmission. Which type is mostly used in our country?	**07**
Q.5	**(a)**	What is faithful amplification? Write the basic conditions for faithful amplification.	**03**
	(b)	Reduce the following Boolean expressions to the required number of literals. $ABC + A'B'C + A'BC + ABC' + A'B'C'$ (to five literals) $BC + AC' + AB + BCD$ (to four literals)	**04**
	(c)	What is an Op-Amp? State various applications of Op-Amp.	**07**
		OR	
Q.5	**(a)**	Draw the figure of bridge rectifier.	**03**
	(b)	Draw the circuit and truth table of NAND and NOR gates.	**04**
	(c)	Draw the pin diagram of 8085.	**07**

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