Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2130105 **Date: 05/06/2017**

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.**

Q.1		**Short Questions**	**14**
	1	What is ideal transformer?	
	2	Why core of transformer is laminated?	
	3	What the purpose is of brush in DC Generator?	
	4	Write down EMF equation of DC Generator.	
	5	Write down torque equation of DC Motor.	
	6	Which type of synchronous generators is used in hydro power plant?	
	7	Why are centrifugal switches provided on many 1-phase Induction motors?	
	8	How the direction of a capacitor start induction motor is be reversed?	
	9	Define the power factor.	
	10	State the advantages of skewing in rotor of induction motor.	
	11	What is the efficiency of full wave and half wave rectifier?	
	12	Define the armature reaction in DC Machine.	
	13	Which factor is affecting on hysteresis loss?	
	14	What do you mean by residual flux in DC Generator?	
Q.2	**(a)**	Explain working principle of DC Generator.	**03**
	(b)	Explain armature control method of DC shunt motor.	**04**
	(c)	Explain internal and external characteristic of DC Generators.	**07**
		OR	
	(c)	With diagram explain 4 point starter of DC Motor.	**07**
Q.3	**(a)**	Explain working principle of 3-phase induction motor.	**03**
	(b)	Explain torque slip characteristic of 3 phase induction motor.	**04**
	(c)	Explain construction and operation of universal motor.	**07**
		OR	
Q.3	**(a)**	Give the condition for synchronizing of alternator.	**03**
	(b)	Explain law for economic choice of conductor size.	**04**
	(c)	With diagram explain typical layout of AC supply scheme.	**07**
Q.4	**(a)**	Define voltage regulation of alternator. Give its classification.	**03**
	(b)	Give the comparison between indoor and outdoor substation.	**04**
	(c)	Explain key diagram of 66/11 KV substations.	**07**
		OR	
Q.4	**(a)**	Give the comparison of DC and AC transmission.	**03**
	(b)	Define tariff. Explain any two types of tariff.	**04**
	(c)	Explain method of power factor improvement.	**07**
Q.5	**(a)**	Give the comparison between half wave rectifiers and full wave rectifiers.	**03**
	(b)	Explain operation and pin diagram of IC 741 OPAM.	**04**
	(c)	Explain following basic logic gates circuits with truth table: NAND, NOR, EX-OR, EX-NOR	**07**

OR

Q.5	**(a)**	Explain De-Morgan's theorem.	**03**
	(b)	What is a transistor amplifier? Give its classification.	**04**
	(c)	With diagram explain architecture of 8085 microprocessor.	**07**

****