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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 150802 **Date: 27/04/2017**

Subject Name: Electrical Machine

Time: 02:30 PM to 05:00 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	**(a)**	What is the armature reaction? How does it affect the main field flux? Define GNP & MNP.	**07**
	(b)	Differentiate between Lap & wave winding.	**07**
Q.2	**(a)**	Draw neat sketch & explain in detail about scott connection.	**07**
	(b)	Describe Hopkinson's test for obtaining the efficiency of two similar shunt motors.	**07**
		OR	
	(b)	What is mean by tertiary winding? What are the applications of tertiary winding?	**07**
Q.3	**(a)**	Why transformers need to connect in parallel? What are the conditions to be satisfied for parallel operation of transformers?	**07**
	(b)	What is heat run test of dc machine? Explain in detail about thermometer method for temperature measurement.	**07**
		OR	
Q.3	**(a)**	Draw the circle diagram & explain the procedure to draw circle diagram of three phase induction motor.	**07**
	(b)	Draw the connection diagram & explain blocked rotor test & no load test on three phase induction motor.	**07**
Q.4	**(a)**	What are the various methods for speed control of three phase induction motor? Draw the connection diagram & explain any one in detail.	**07**
	(b)	Explain "V curve" & "Invert V" curve of synchronous motor.	**07**
		OR	
Q.4	**(a)**	Why single phase induction motor is not self-started? Explain double field revolving theory.	**07**
	(b)	Discuss the construction, operation & speed control for the Universal motor.	**07**
Q.5	**(a)**	Draw the neat sketch & explain the working, construction of permanent magnet brushless DC motor.	**07**
	(b)	Explain the construction & working of variable reluctance stepper motors.	**07**
		OR	
Q.5	**(a)**	Draw the connection diagram & explain in detail about capacitor start capacitor run single phase induction motor.	**07**
	(b)	In a brake test on a dc shunt motor, the load on one side of the brake band was 35kg and the other side 5 kg. The motor was running at 1300 rpm; its input being 70A at 420 V dc. The pulley diameter is 1m. Determine the torque, output of the motor & efficiency of the motor.	**07**

****