GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER–II EXAMINATION – SUMMER 2016

Subject Code:X21101   **Date:31/05/2016**
Subject Name:ELECTRICAL ENGINEERING
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	**(a)**	Explain the types of d.c. generators.	**07**
	(b)	Derive the equation of armature torque of a d.c. motor.	**07**
Q.2	**(a)**	Explain the construction features and working principle of 1-phase transformer.	**07**
	(b)	Explain torque-slip characteristics of 3-phase induction motors.	**07**
		OR	
	(b)	Explain working principle of 3-phase induction motor. Write types of 3-phase induction motors.	**07**
Q.3	**(a)**	Why starter is necessary for d.c. motors ? Explain three point starter.	**07**
	(b)	Explain the characteristics of d.c. shunt and series motors.	**07**
		OR	
Q.3	**(a)**	What is the voltage regulation of alternator ? Explain synchronous impedance method for voltage regulation.	**07**
	(b)	Explain equivalent circuit of 1-phase transformer.	**07**
Q.4	**(a)**	Explain the methods of speed control of d.c. shunt motors.	**07**
	(b)	A 4 pole, d.c. motor take a 50 A armature current. The armature has lap connected 480 conductors. The flux per pole is 20 mWb. Calculate the gross torque developed by the armature of the motor.	**07**
		OR	
Q.4	**(a)**	Explain construction and working principle of repulsion motor.	**07**
	(b)	Explain construction and working principle of permanent magnet motor.	**07**
Q.5	**(a)**	Explain specifications of stepper motor and its applications.	**07**
	(b)	Explain construction features and working principle of synchronous motor. Also write its applications.	**07**
		OR	
Q.5	**(a)**	Explain construction and working of AC servomotors.	**07**
	(b)	A 4 pole, 3-phase, 50 Hz, star connected induction motor has a full load slip of 4 %.Calculate full load speed of the motor.	**07**

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