Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC - SEMESTER–VI EXAMINATION – WINTER 2015

Subject Code:X60901 **Date:10/12/2015**

Subject Name: Electrical machine-III

Time: 02:30pm to 05:00pm **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)**	Why synchronous motor is not self starting? Explain methods for it's starting.	**07**
	(b)	Explain Swinburne test for D.C.shunt motor .	**07**
Q.2	**(a)**	Explain different types of torques of synchronous motor also explain hunting in synchronous machine	**07**
	(b)	Discuss various types of rotor connections of auto synchronous motor. Derive the equations of equivalent AC excitation current in each case	**07**
		OR	
	(b)	What are the causes of harmonics in the voltage waveform of an alternator? How they can be minimized?	**07**
Q.3	**(a)**	Explain V- curve of synchronous motor	**07**
	(b)	Explain field test for D.C.Machine.	**07**
		OR	
Q.3	**(a)**	Draw experimental set up diagram for brake test. Also write it's efficiency equation.	**07**
	(b)	Explain Hopkinson's test with neat diagram for two coupled similar D.C. machines	**07**
Q.4	**(a)**	Describe construction, working and applications of Hysteresis motor	**07**
	(b)	Describe construction, working and applications of reluctance motor	**07**
		OR	
Q.4	**(a)**	Explain AC servo motors.	**07**
	(b)	Explain construction and working of Induction regulator.	**07**
Q.5	**(a)**	Explain slip-test to find out direct axis and quadrature axis synchronous reactance of salient pole synchronous machine	**07**
	(b)	Find the no-load phase and line voltage of a star-connected 3-phase,6-pole alternator which runs at 1200 rpm, having flux per pole of 0.1 Wb sinusoidally distributed . Its stator has 54 slots having single layer winding. Each coil has 8 turns and the coil is chorded by 1 slot	**07**
		OR	
Q.5	**(a)**	Explain methods for synchronization of alternator.	**07**
	(b)	Explain Zero power factor method to predetermine the voltage regulation of alternator	**07**

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