Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – SUMMER 2013

Subject Code: 133402 **Date: 27-05-2013**

Subject Name: Electrical Drives and Control

Time: 02.30 pm - 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)**	Explain classification of electric drives and also explain factors affecting the selection of drive.	**07**
	(b)	State the advantages of an electric drive system and also answer which type of drive is used for rolling mills?	**07**
Q.2	**(a)**	Draw and explain various characteristic of DC shunt motor.	**07**
	(b)	Explain construction and working of capacitor start 1 phase induction motor.	**07**
		OR	
	(b)	A DC shunt motor runs at a speed of 1000 rpm on no load taking a current of 6 Amp. From the supply, when connected to 220 volts dc supply. Its full load current is 50 Amp. Calculate its speed on full load. Assume Armature Resistance = 0.3 ohm & Shunt resistance = 110 ohm	**07**
Q.3	**(a)**	Explain necessity of starter in DC motor and basic arrangement of starter with neat diagram.	**07**
	(b)	Explain Direct on line starter with figure.	**07**
		OR	
Q.3	**(a)**	Explain 3-point starter with neat diagram.	**07**
	(b)	Explain star-delta starter and rotor resistance starter for 3-phase induction motor.	**07**
Q.4	**(a)**	Explain various method of speed control of DC shunt motor.	**07**
	(b)	A DC series motor runs at 1000 rpm when taking 20 amps from 200 Volt supply. Its armature resistance is 0.5 Ohm and series field resistance is 0.2 Ohm. Find the speed if it continues to draw a current of 20 Amp but a field winding is shunted with a resistance of 0.2 Ohm. Assume that flux for the field winding when carrying 10 Amp is 70 % of that when carry 20 Amp.	**07**
		OR	
Q.4	**(a)**	Explain ward-Leonard method of speed control.	**07**
	(b)	A 4 pole series wound fan motor draws an armature current of 50 amps, when running at 2000 rpm on a 230 volts dc supply with four field coils connected in series. The four field coils are then reconnected in two parallel groups of two coils in series. Assuming flux/pole to be proportional to the exciting current and load torque proportional to the square of the speed. Find the new speed and armature current.	**07**
Q.5	**(a)**	Explain V/f speed control method of 3-phase Induction Motor.	**07**
	(b)	Explain classification of choppers. Explain any two choppers in details.	**07**
		OR	
Q.5	**(a)**	Explain in detail Kramerôs system.	**07**
	(b)	Explain 1 phase half wave controlled rectifier with resistive load.	**07**

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