Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III • EXAMINATION – WINTER • 2014

Subject Code: 133402 **Date: 23-12-2014**

Subject Name: Electrical Drives & 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 types of electric drives.	**07**
	(b)	Explain classes of duty for drives.	**07**
Q.2	**(a)**	Explain Characteristics of DC series motor and explain why series motor is never started on NO-load condition.	**07**
	(b)	For a 4 pole, 3 phase, 50 Hz induction motor ratio of stator to rotor turns is 2. On a certain load, its speed is observed to be 1455 rpm when connected to 415 volts supply. Calculate 1) Frequency of emf in running condition. 2) Magnitude of induced emf in the rotor at standstill. Assume star connected stator.	**07**
		OR	
	(b)	A DC shunt motor runs at a speed of 1000 rpm on no load taking a current of 6 ampere from the supply, when connected to 220volts DC supply. Its full load current is 50 Amp. Calculate its speed on full load. Assume Ra= 0.3 ohm and Rsh= 110 ohm.	**07**
Q.3	**(a)**	Explain split phase induction motor with neat diagram.	**07**
	(b)	Explain Autotransformer starter with neat diagram.	**07**
		OR	
Q.3	**(a)**	Explain shaded pole induction motor with neat diagram.	**07**
	(b)	Explain 2 point starter with neat diagram.	**07**
Q.4	**(a)**	Explain speed control methods of DC series motor.	**07**
	(b)	A 250volt dc shunt motor has a shunt field resistance of 200 ohms and an armature resistance of 0.3 ohm. For a given load, motor runs at 1500 rpm drawing a current of 22amps from the supply. If a resistance of 150 ohms is added in series with the field winding, find the new armature current and the speed. Assume load torque constant and magnetization curve to be linear.	**07**
		OR	
Q.4	**(a)**	Explain speed control methods of DC shunt motor.	**07**
	(b)	Explain voltage/frequency speed control method for induction motor.	**07**
Q.5	**(a)**	Explain classification of Chopper.	**07**
	(b)	Compare VSI and CSI.	**07**
		OR	
Q.5	**(a)**	Explain single phase full bridge inverters for AC drives.	**07**
	(b)	Explain Half bridge Inverter with Inductive load.	**07**

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