Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (New) EXAMINATION – WINTER 2018

Subject Code:2133402 Date:28/11/2018

Subject Name:Electrical Drives and Controls

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)**	Describe the classification of Electric Drives	**03**
	(b)	Differentiate between AC and DC Drive.	**04**
	(c)	Explain the basic elements of an electric drive system with figure and also mention the advantages of an Electric Drive.	**07**
Q.2	**(a)**	Define DC Shunt and DC Series Motor with a neat sketch.	**03**
	(b)	A four pole, 3-phase, 50Hz, star connected induction motor has full load with slip of 4%, Calculate the speed of the motor on full load condition.	**04**
	(c)	Explain Electric braking of DC shunt Motor	**07**
		OR	
	(c)	Derive the Torque equation of DC Motor and explain the characteristics of DC Series Motor.	**07**
Q.3	**(a)**	Define the term Slip and Synchronous speed.	**03**
	(b)	Differentiate between Squirrel cage and Slip ring induction Motors.	**04**
	(c)	Classify the different types of Single Phase Induction Motor and explain any one of them with a neat sketch.	**07**
		OR	
Q.3	**(a)**	Explain the necessity of starters for D.C Motor.	**03**
	(b)	Explain the effect of slip on Rotor frequency & Rotor induced EMF.	**04**
	(c)	Explain Induction motor as a transformer.	**07**
Q.4	**(a)**	Why DC series motor should not be started without loaded conditions?	**03**
	(b)	Write a short note on Ward-Leonard method of speed control.	**04**
	(c)	Explain the types of Choppers with neat sketch.	**07**
		OR	
Q.4	**(a)**	Explain any one of the speed control methodfor DC shunt Motor.	**03**
	(b)	Write down the applications of DC Choppers.	**04**
	(c)	Explain 3 point starter with a neat diagram.	**07**
Q.5	**(a)**	Briefly explain the working of Star-Delta starter.	**03**
	(b)	Explain Voltage/frequency control of AC Drives.	**04**
	(c)	Explain Single phase Full Bridge Inverter with Inductive load	**07**
		OR	
Q.5	**(a)**	Write down the merits and demerits of AC Drives.	**03**
	(b)	Differentiate between Voltage Source Inverter (VSI) and Current Source Inverter (CSI).	**04**
	(c)	Explain Single phase Half wave controlled rectifier with Resistive load.	**07**

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