

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2133402****Date: 04/06/2019****Subject Name: Electrical Drives and Controls****Time: 02:30 PM TO 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.

		Marks
Q.1	(a) What are the factors influencing the choice of electrical drives?	03
	(b) What is a Group Electric Drive (Shaft Drive)? What are the advantages and disadvantages of Group drive (Shaft drive)?	04
	(c) Compare A.C and D.C drives.	07
Q.2	(a) Discuss in detail the determination of power rating of motors.	03
	(b) Draw and explain Torque-Speed characteristic of DC shunt motor	04
	(c) Discuss different methods of electrical braking of DC Machines	07
	OR	
	(c) Draw and explain torque/speed curve of 3-phase induction motor	07
Q.3	(a) Explain characteristics of DC shunt motor.	03
	(b) Draw and explain Torque-Speed characteristic of DC series motor	04
	(c) What is the need of starter in DC motor. Explain 3-point starter with diagram.	07
	OR	
Q.3	(a) Write a note on construction of 3-phase induction motor.	03
	(b) Explain rotor rheostat control of slip-ring induction motor.	04
	(c) A 230 V, 10 hp d.c. shunt motor delivers power to a load at 1200 r/min. The armature current drawn by the motor is 200 A. The armature circuit resistance of the motor is 0.2 ohms and the field resistance is 115 ohms. If the rotational losses are 500W, what is the value of the load torque?	07
Q.4	(a) Draw and explain rotor rheostat control of slip-ring induction motor in brief	03
	(b) Explain how the speed of a DC Shunt Motor can be varied both above and below the speed at which it runs with full field current	04
	(c) Discuss the Ward-Leonard speed control system with a neat circuit diagram. Also mention its advantages and disadvantages	07
	OR	
Q.4	(a) Why DC series motor should not be started without loaded conditions?	03
	(b) Explain working of Star-Delta starter in brief.	04
	(c) Explain with neat sketch Type-A & Type-B chopper control method of speed control of DC Motors	07
Q.5	(a) Explain the working of Conventional Scherbius system with neat circuit diagram.	03
	(b) Write down the merits and demerits of AC Drives.	04
	(c) Explain the V/f control method of AC drive with neat sketches	07
	OR	
Q.5	(a) Explain the working of Conventional Kramer system with neat circuit diagram.	03
	(b) Draw the power circuit arrangement of three phase variable frequency inverter for the speed control of three phase induction motor and explain its working	04
	(c) Explain in detail about the various methods of solid state speed control techniques by using inverters	07
