

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3172402****Date:10/12/2021****Subject Name:Industrial Drives and Control****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.
4. Simple and non-programmable scientific calculators are allowed.
5. Notations used have usual meaning.

		MARKS
Q.1	(a) Define term “Solid state control”.	03
	(b) What is steady state stability of an Electric drive? Explain in brief.	04
	(c) Draw and explain basic block diagram of Electrical Drive system along with its function.	07
Q.2	(a) What are the types of load?	03
	(b) Draw and explain Constant load torque characteristics.	04
	(c) Explain working principle of speed control of DC motor with phase controlled full bridge converter.	07
OR		
	(c) Write a short note on Load equalization in Electrical drives.	07
Q.3	(a) Draw speed-torque characteristic of series motor.	03
	(b) Explain, how output voltage of chopper circuit can be varied?	04
	(c) Draw and explain Closed loop speed control scheme for DC motor.	07
OR		
Q.3	(a) Draw speed-torque characteristics of induction motor. Also indicate stable operating region.	03
	(b) How scalar control is different from vector control for induction motor? Explain in brief.	04
	(c) Explain V/F control used for speed control of Induction motor (IM).	07
Q.4	(a) What is basic principle of field voltage control of DC motor?	03
	(b) Compare CSI based drive and VSI based drive in all respect.	04
	(c) Explain stator voltage control method used for speed control of induction motor control (IM).	07
OR		
Q.4	(a) Draw circuit diagram of Buck chopper circuit with necessary nomenclature.	03
	(b) Explain term “Duty Cycle”	04
	(c) Write a short note on BLDC machine drive.	07
Q.5	(a) Why DC series motor is used for high torque application?	03
	(b) What is Stationary reference frame? Explain.	04
	(c) Write a short note on Solar powered Drive.	07
OR		
Q.5	(a) What is armature voltage control for DC motor?	03
	(b) Explain in brief phase angle control of Semi-controlled converter used for DC motor drive.	04
	(c) Explain Direct torque control (DTC) method of induction motor (IM).	07
