Seat No.: _____ Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEMESTER–VIII(OLD) • EXAMINATION – WINTER 2017

Subject Code: 181702 **Date: 02-11-2017**

Subject Name: Motion Control

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.**

Q.1	**(a)**	Explain resolvers and magnetic pickups as a encoder.	**07**
	(b)	List out selection criteria for dc motor for incremental motion applications.	**07**
Q.2	**(a)**	Explain permanent magnet moving coil dc motor.	**07**
	(b)	Explain the techniques for minimizing torsional resonance effect in detail.	**07**
		OR	
	(b)	List out all methods of speed control of dc motor and explain any one in detail.	**07**
Q.3	**(a)**	Write a short note on unidirectional servo amplifier.	**07**
	(b)	Explain bipolar PWM amplifiers.	**07**
		OR	
Q.3	**(a)**	Draw and explain velocity control system with block diagram.	**07**
	(b)	Write short not on phase locked servo system.	**07**
Q.4	**(a)**	Describe the hybrid type step motor with relevant waveform/diagram.	**07**
	(b)	List out the selection criteria for stepper motor. Explain step angle resolution and torque requirements.	**07**
		OR	
Q.4	**(a)**	What are the advantages and disadvantages of step motors? Explain the step motor performance characteristics in detail.	**07**
	(b)	Explain any two application of step motor.	**07**
Q.5	**(a)**	Explain any one suppression circuit for DC motor control with diagram.	**07**
	(b)	Explain effect of lead angle in closed loop control of step motor.	**07**
		OR	
Q.5	**(a)**	Draw and explain bidirectional four-phase single and two phase on logic sequencer circuit with waveform of output phase for each pulses.	**07**
	(b)	Why over drive circuits are required for step motors? Explain dual voltage control circuit.	**07**

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