Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI • EXAMINATION – WINTER • 2014

Subject Code: 161703 **Date: 01-12-2014**

Subject Name: Control System Components

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)**	What is need of gears in control system? Explain the design for load matching for gears in detail with example.	**07**
	(b)	Explain the cam terminology with neat sketch.	**07**
Q.2	**(a)**	What is meant by backlash in gears? How it is minimized?	**07**
	(b)	State the procedure for the drawing of Cam profile with suitable example and explain with calculation.	**07**
		OR	
	(b)	Which are different types of stepper motors? Explain the Variable Reluctance Type Stepper Motor in detail.	**07**
Q.3	**(a)**	What is purpose of Relay Circuits? Explain it with relevant diagram.	**07**
	(b)	Discuss and Derive the Transfer Function of Field Controlled DC Servomotor. Draw the block diagram also.	**07**
		OR	
Q.3	**(a)**	What are the Rated characteristics of contactors? Explain various Tests performed on Contactors.	**07**
	(b)	Discuss the various Relay Problems And its Remedies. Explain the terms Relay Race, Actuation and Release Time also..	**07**
Q.4	**(a)**	Discuss the control Valve Selection Guidelines, with valid examples / justification.	**07**
	(b)	What is the need of Temperature switches and Thermostats in the field of control and instrumentation? Explain with suitable example.	**07**
		OR	
Q.4	**(a)**	Explain Basic and FCI equation of control valve sizing.	**07**
	(b)	Explain the working of any one flow switch is using movable parts and the one which is not using movable parts.	**07**
Q.5	**(a)**	What is the significant of control valve flow characteristic? Explain selection of flow characteristics based on application with reason.	**07**
	(b)	Explain the working of pneumatic and electronic transmitters.	**07**
		OR	
Q.5	**(a)**	What is the need of valve positioner for the operation of control valve? Explain the operation of spilt range with example.	**07**
	(b)	Enumerate various types & Function of Relieving Devices. Explain Rupture Discs in detail.	**07**

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