GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) - EXAMINATION - SUMMER 2016

Subject Code:2160807 Date: 13/05/2016 **Subject Name: Digital Control System** 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** 07 (a) Explain the Basic Structure of Computer-Controlled System with Example. Explain Configuration of the Basic Digital Control Scheme. **07 (b)** Explain the Generalized Operational Block Diagram of Feedback Control **Q.2** (a) 07 System. Explain the Jury Stability Criterion. **(b)** 07 OR Explain the various Advantages offered by Digital Control. 07 **(b) Q.3** Explain the Block Diagram of the PID Controller. **07** (a) Explain the Basic Block Diagram of PLC and Explain the Ladder Diagram of 07 **(b) AND** Function. OR Explain the Model of the Sample and Hold Operation. Q.3 07 (a) Explain Mathematical Modeling of Sampling Process. **07 (b) Q.4** (a) Explain the z-Domain Description of System with Dead Zone with Necessary 07 Equation. Explain Conversion of State variable Modals to transfer Function. **(b)** 07 OR Explain the Block Diagram of the Digital Temperature Control System. **Q.4 07** (a) Explain the Controllability and Observability. **(b)** 07 0.5 (a) Explain the state variable Modeling and Derive the Sate Equation and Output 07 Equation. Explain the Invariance property of a state variable system. 07 **(b)** Q.5 Explain the Eigen Values and Eigen Vectors of a System. 07 (a) **(b)** Explain the state variable analysis for a Multi-Variable system. 07
