

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII • EXAMINATION – WINTER • 2014****Subject Code: 181702****Date: 29-11-2014****Subject Name: Motion Control****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) Derive the mathematical model of separately excited DC motor and comment on time constants. **07**
(b) Explain any one method of speed measurement of DC motor. **07**
- Q.2** (a) Comment on Torsional resonance and its remedy. **07**
(b) List the types of PWM Amplifiers for DC servo systems. Explain unipolar PWM Amplifiers in detail. **07**
- OR**
- (b) Explain velocity control system for DC motor with velocity sensing circuit. **07**
- Q.3** (a) Explain about velocity control systems with current amplifiers in detail. **07**
(b) Explain position control system with suitable diagrams in detail. **07**
- OR**
- Q.3** (a) Explain Linear VR stepper motor in detail **07**
(b) Explain magnetic pickup as encoder and resolver as incremental encoder. **07**
- Q.4** (a) Explain the working of Bidirectional three phase logic sequencer in detail **07**
(b) Explain the working of Dual Voltage driver for four phase stepper motor with two phase on control in detail **07**
- OR**
- Q.4** (a) Explain the variable unit time delay speed control system. **07**
(b) Explain a complete closed loop point to point controller with encoder feed back in detail **07**
- Q.5** (a) Explain effect of switching angle and pulse injection on the closed loop response of four phase step motors. **07**
(b) Explain Permanent magnet stator stepper motor in detail **07**
- OR**
- Q.5** (a) Explain Hybrid stepper motor in detail. **07**
(b) Brief about microprocessor based stepper motor speed control. **07**
