| Seat No.: | Enrolment No. |
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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII • EXAMINATION - WINTER • 2014

| Subject Code: 181702 Subject Name: Motion Control Time: 02:30 pm - 05:00 pm Instructions: | | Code: 181702 Date: 29-11-201 | Date: 29-11-2014 Total Marks: 70 | |
|---|-------------------|---|-----------------------------------|--|
| | | 2:30 pm - 05:00 pm Total Marks: 7 | | |
| 11131 | | Attempt all questions. Make suitable assumptions wherever necessary. 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 | |
| Q.2 | (b) (a) (b) | Explain any one method of speed measurement of DC motor. Comment on Torsional resonance and its remedy. List the types of PWM Amplifiers for DC servo systems. Explain unipolar PWM Amplifiers in detail. | 07 07 07 | |
| | (b) | OR Explain velocity control system for DC motor with velocity sensing circuit. | 07 | |
| Q.3 | (a) (b) | Explain about velocity control systems with current amplifiers in detail. Explain position control system with suitable diagrams in detail. OR | 07 07 | |
| Q.3 | (a) (b) | Explain Linear VR stepper motor in detail Explain magnetic pickup as encoder and resolver as incremental encoder. | 07 07 | |
| Q.4 | (a) (b) | Explain the working of Bidirectional three phase logic sequencer in detail Explain the working of Dual Voltage driver for four phase stepper motor with two phase on control in detail OR | 07 07 | |
| Q.4 | (a) (b) | Explain the variable unit time delay speed control system. Explain a complete closed loop point to point controller with encoder feed back in detail | 07 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 OR | 07 | |
| Q.5 | (a) (b) | Explain Hybrid stepper motor in detail. Brief about microprocessor based stepper motor speed control. | 07 07 | |
