

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012**

**Subject code: 161703****Date: 04/01/2013****Subject Name: Control System Components****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|-----|-----|--|----|
| Q.1 | (a) | Define the following-  | 06 |
|     |     | (i) Flow Coefficient<br>(iii) Bonnet Assembly<br>(v) Rupture Disc  |    |
|     |     | (ii) Seat rings<br>(iv) Valve Positioner<br>(vi) Safety Relief Valve   |    |
|     | (b) | Define the following terms used in gears-  | 03 |
|     |     | (i) Gear Ratio<br>(iii) Pitch Circle   |    |
|     |     | (ii) Back lash   |    |
|     | (c) | Write short note on Flow switches  | 05 |
| Q.2 | (a) | Why is selection of control valve important to the chemical process and which points are considered for its selection? | 07 |
|     | (b) | Classify stepper motors and describe any one detail.   | 07 |
|     |     | <b>OR</b>  |    |
|     | (b) | Explain different types of cams.   | 07 |
| Q.3 | (a) | What is difference between electronic transmitter and intelligent transmitter?   | 07 |
|     | (b) | Describe the level switches used for level detection of solid or liquid.   | 07 |
|     |     | <b>OR</b>  |    |
| Q.3 | (a) | Explain the working of DC servomotor.  | 07 |
|     | (b) | Explain the noise problems associated with control valve and their remedies.   | 07 |
| Q.4 | (a) | Explain non-contact type proximity switches.   | 07 |
|     | (b) | Which are types of actuators used for control valves and explain any one detail.                                       | 07 |
|     |     | <b>OR</b>  |    |
| Q.4 | (a) | Which are various types of three way control valve? Explain their application with suitable example.                   | 07 |
| Q.4 | (b) | What is the difference between relay and contactor? Name various types relays used in industries.                      | 07 |
| Q.5 | (a) | What is the application of gear? Explain the working any one type of gear in detail.                                   | 07 |
|     | (b) | Explain the merits and demerits of reed relays.  | 07 |
|     |     | <b>OR</b>  |    |
| Q.5 | (a) | Explain the construction and working of induction motor.   | 07 |
|     | (b) | Explain the working of safety valve or relief valve.   | 07 |

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