

**FACULTY OF INFORMATICS**

**B.E. 4/4 (IT) I – Semester (Old) Examination, July 2014**

**Subject: Digital Instrumentation and Control (Elective – II)**

**Time: 3 Hours**

**Max.Marks: 75**

**Note: Answer all questions from Part A. Answer any five questions from Part B.**

**PART – A (25 Marks)**

- |    |   |   |
|----|---|---|
| 1  | Distinguish between SCR and TRIAC.  | 2 |
| 2  | Define transducers and write types of transducers.                        | 3 |
| 3  | Explain different process control modes briefly.                          | 3 |
| 4  | Briefly explain thermistor characteristics.                               | 2 |
| 5  | Distinguish between photodiode and light emitting diode.                  | 2 |
| 6  | Explain working principle of Actuators.                                   | 3 |
| 7  | Define final control element.   | 2 |
| 8  | What is a controller mode? List the controller modes.                     | 3 |
| 9  | State the characteristics of digital data.                                | 2 |
| 10 | Define stability of a control system and also explain how to maintain it. | 3 |

**PART – B (50 Marks)**

- |    |  |    |
|----|--|----|
| 11 | a) Draw the block diagram of process control system and explain each elements of process control system. | 5  |
|    | b) With a neat diagram explain the operation of A/D conversion.  | 5  |
| 12 | Describe the pressure and flow sensors in detail.  | 10 |
| 13 | Present the working operation of any two optical sources employed in process instrumentation.            | 10 |
| 14 | a) What is a ladder diagram program in PLC's? Explain it by taking a typical program.                    | 5  |
|    | b) Explain the following modes of operations of analog controllers (a) P.I. (b) P.I.D.                   | 5  |
| 15 | a) Differentiate analog and digital controllers.   | 5  |
|    | b) Discuss the design considerations in analog controllers.  | 5  |
| 16 | Present various aspects of final control and control elements.   | 10 |
| 17 | Write short notes on the following:  |    |
|    | a) Actuators   | 3  |
|    | b) Thermocouples   | 4  |
|    | c) Photo detectors   | 3  |

\*\*\*\*\*