

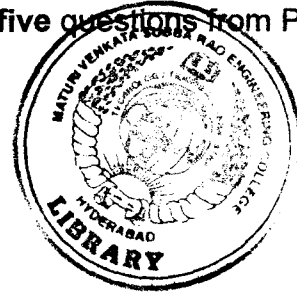
FACULTY OF INFORMATICS

B.E. 4/4 (IT) I - Semester (Main) Examination, December 2011

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

Time : 3 Hours

Max. Marks: 75

Note: Answer all questions of Part – A. Answer any five questions from Part-B.**PART – A (25 Marks)**

1. What do you understand by signal conditioning? (2)
2. How can an Op-amp act as a zero detector? (3)
3. Distinguish between Thermocouple and Thermistor. (3)
4. What is the working principle of liquid expansion Thermometer? (2)
5. Distinguish between photodiode and light emitting diode. (3)
6. Give the applications of optical sensors. (2)
7. Define the final control element. (2)
8. Define 2-position and floating control mode. (3)
9. What are the characterization of cascade control ? (3)
10. Explain the role of computers in process control. (2)

PART – B (5x10=50 Marks)

11. The performance of a control system is evaluated using number of performance parameters. Discuss number of such parameters in detail. (10)
- 12.(a) Draw the circuit of 3 op-amp Instrumentation amplifier in conjunction with a bridge and prove its output expression with analysis. (5)
(b) Explain the operation of solid state temp sensors, briefly. (5)
- 13.(a) Explain the principle of strain gauge and explain how it will be used in load cell. (5)
(b) Explain the principle of operation of a photovoltaic cell. (5)
- 14.(a) Describe the principles and structures of optical pyrometers. (5)
(b) Explain the different types of actuators used in Industries. (5)
- 15.(a) Explain the working of PLC's. (5)
(b) Explain different composite controller modes. (5)
- 16.(a) Explain the principle and different types of pneumatic controllers. (5)
(b) Discuss different design considerations in Digital controllers. (5)
17. Write short notes on the following :
 - (a) LVDT (4)
 - (b) Process loop tuning (3)
 - (c) Controller Software (3)