

Code No: 07A62204

**R07**

**Set No. 2**

**III B.Tech II Semester Examinations, December 2010**

**PC BASED INSTRUMENTATION**

**Instrumentation And Control Engineering**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Describe the operation of various types of input devices such as pushbuttons, switches, selector switches & limit switches. [16]
2. Explain in detail a computer based industrial controller with the help of block diagram. [16]
3. Explain HART protocol operation with a neat block diagram. [16]
4. Describe the BLOCK MOVE function of a PLC. [16]
5. Describe file specifications and file extensions in DOS with examples. [16]
6. (a) Describe PID tuning functions with examples.  
(b) Explain the characteristics of a PID module in PLC. [8+8]
7. Draw and discuss a ladder diagram for an automatic control circuit of a water tank process. [16]
8. Explain the standard GPIB bus structure with the help of a diagram. [16]

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**R07****Set No. 4****III B.Tech II Semester Examinations, December 2010****PC BASED INSTRUMENTATION****Instrumentation And Control Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Explain the different types of registers available in a PLC. [16]
2. Write short notes on the following.
  - (a) Smart transmitters.
  - (b) Smart valves. [8+8]
3. (a) What are industrial signal controllers?  
(b) What is SCXI? What are the appropriate analog inputs and digital I/O that can be used with SCXI? [6+10]
4. Explain analog operation of a PLC with examples. [16]
5. Draw and explain different types of symbols used in PLC ladder diagrams. [16]
6. Explain in detail the three different ways of independent and shared memory I/O bus structure. [16]
7. (a) Explain how MS DOS handles Input and Output devices.  
(b) Explain the I/O channels and their functions recognized by MS DOS. [8+8]
8. Describe in detail each block of the PLC CPU power supply including the battery backup system with the help of block diagram. [16]

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**R07****Set No. 1****III B.Tech II Semester Examinations, December 2010****PC BASED INSTRUMENTATION****Instrumentation And Control Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Explain the programming of ON - OFF outputs of a PLC. [16]
2. Explain the characteristics of a P+D controller with an example. [16]
3. (a) What is a field bus?  
(b) Explain the operation of field bus with a neat diagram. [6+10]
4. What is MS-DOS debugger? Describe the function of each of the Debugger commands. [16]
5. (a) With a block diagram explain in detail the concept involved in a data acquisition system.  
(b) What items must be added to a standard personal computer before it can be used as an industrial controller. [8+8]
6. (a) What are remote I/O modules used in data acquisition and control? Explain with a diagram.  
(b) What is meant by configuring an add on card? [10+6]
7. List five microprocessors used in PLC CPUs. Which is the least powerful and which is the most powerful. Why? [16]
8. Describe the Table - to - Register move and Register - to - Table move functions of a PLC. [16]

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**R07****Set No. 3****III B.Tech II Semester Examinations, December 2010****PC BASED INSTRUMENTATION****Instrumentation And Control Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Describe the following in the design and development of PC expansion cards [5+5+6]
  - (a) power rails
  - (b) supply rail distribution
  - (c) address decoder.
2. Discuss with a neat sketch the ladder diagram approach of a PLC programming. [16]
3. What are the different types of busses used in process industries? Explain. [16]
4. Explain different arithmetic functions of a PLC. [16]
5. With a block diagram explain about the essential features of operating system for PC based instrumentation in detail. [16]
6. Discuss how Hydraulic cylinders are interfaced and controlled by PLC. [16]
7.
  - (a) What is a function in C programming? give one example.
  - (b) Show how the function is called by the main program?
  - (c) Show how one or more parameters are passed to the Function. [5+5+6]
8.
  - (a) Define computer integrator manufacturing (CIM) system.
  - (b) Explain how a PLC is used in CIM with neat diagrams. [4+12]

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