

IV B.Tech. I Semester Regular Examinations, November -2005

PC BASED INSTRUMENTATION

**(Common to Electronics & Instrumentation Engineering and
Instrumentation & Control Engineering)**

Time: 3 hours

Max Marks: 80

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

1. Draw the Basic Building blocks of Automation system and explain it in detail?[16]
2. With a figure explain about the essential features of operating system for PC based Instrumentation in detail. [16]
3. What are the internal blocks of a CPU Nucleus Logic, with a schematic block diagram explain the functions of each block in detail. [16]
4. (a) Classify the micro computer bus with respect to the functional aspects.
(b) Differentiate between ISA and EISA standards.
(c) Mention different type of signals that appear on primary expansion slot of ISA bus. [6+5+5]
5. Discuss in detail the operations performed by 8288 bus controller with a neat timing diagram. [16]
6. Draw the block diagram of intel 8237 four channel direct memory access controller used on the IBM PC and explain the functioning of it. [16]
7. Explain in detail the procedure for installing IEEE-488 (GPIB) interface card. [16]
8. (a) What is Virtual Memory through Demand Paging?
(b) How windows implements the virtual environments? [8+8]

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1. Draw the Basic Building blocks of Automation system and explain it in detail?[16]
2. Give the design of a New Generation Mother board and give the I/O Pin description of any New Generation Mother board. [16]
3. List the different blocks in a new Generation mother board and explain its design in detail. [16]
4. (a) Explain the need for Bus Management?
(b) Enumerate the different buses required for communication in a Microcomputer?
(c) Define Bus protocol. What are different aspects of bus operation explain? [6+5+5]
5. Describe in detail the modes of operation of 8259 interrupt controller used in IBM PC. [16]
6. Describe the salient features of monochrome add on card to PC with a neat diagram. [16]
7. (a) How do you check FDC circuits and FDD if any fault occurs?
(b) How do you test HDC and HDD if any problem occurs? [8+8]
8. Write a program in C to demonstrate the operation of both D/A and A/D converters. [16]

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1. (a) Explain the Basic concept of supervisory computer control in automated measurement and control system?
(b) Also explain the concept of direct digital control for the same? [8+8]
2. With a figure explain about the essential features of operating system for PC based Instrumentation in detail. [16]
3. What is a Address bus Logic ? List the various blocks of Address bus Logic and explain the functions of each block in detail. [16]
4. (a) Define different types of micro computer buses and explain?
(b) Classify the control bus into sub buses and define the operation of each sub bus line. [8+8]
5. Discuss in detail the operations performed by 8288 bus controller with a neat timing diagram. [16]
6. Describe the Architecture of 8255 PIO with a neat diagram and explain the functions of modes and operations. [16]
7. (a) Explain the features of ADC/DAC/Digital I/o card.
(b) Discuss the power requirements, Base address selection and I/o map of the card. [8+8]
8. (a) Write a sample program sequence that performs a specified number of A/D conversions in polled mode.
(b) Brief about I/o lines provided on the ADC/DAC card. [8+8]

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1. (a) Explain the different cables used for interfacing a PC to sensors?
(b) Explain the different driving circuit used for interfacing digital output signals. [8+8]
2. Explain about the Functional units of Mother Board and their intercommunication with a diagram in detail. [16]
3. Sketch a figure showing the internal blocks of DMA Logic with interconnections and explain the functions of each block in detail. [16]
4. (a) In VME bus explain the operation of utility control signals by classifying them into different groups.
(b) Give hardware specifications of VME bus. [8+8]
5. Explain in detail about RS-232C serial interface with a neat diagram. What are its limitations. [16]
6. Sketch the general form of the bus interface for a smart peripheral IC 8255 PIO and explain the salient features of it. [16]
7. (a) What are the functions of DIP switches in the Add-on card?
(b) Discuss the following:
 - i. Small computer systems Interface(SCSI)
 - ii. Intelligent Peripheral Interface(IPI)
 - iii. SMD Interface. [8+8]
8. (a) How do you build a 16 bit, interrupt-driven driver DLL?
(b) What is polled-mode Driver? Explain. [8+8]
