Model Questions (ADT#1)

Subject: Instrumentation II (BCT-III/I)

Subject Teacher: Dhawa Sang Dong

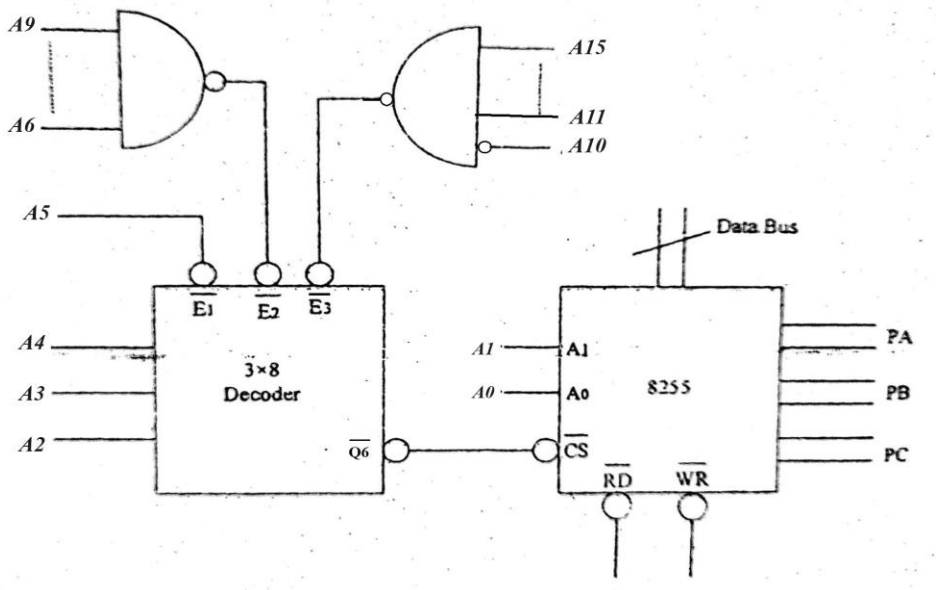
1. Define microprocessor based instrumentation system. Differentiate between open loop and closed loop microprocessor based instrumentation. Describe direct memory access. [**1+4+3]**

2. What are the basic features of MBI system? Compare open loop and closed loop microprocessor based system with suitable example. **[2+6]**

3. Explain microprocessor based instrumentation system with its block diagram. List out the factors to be considered while selecting a processor. **[5+3]**

4. Describe various well-known techniques while interfacing an I/O device with a personnel computer system. Define I/O mapped I/O and memory mapped I/O with suitable examples. How can you generate I/O mapped and memory mapped signals using IO/M, RD and WR signals? **[3+5]**

5. What do you understand by a closed loop MBI system? Differentiate unique vs non-unique address decoding. Specify the address for the port of 855PPI shown bellow. **[1+4+3]**



6. Explain the different schemes of parallel data transfer with suitable timing diagram. Explain the functional block diagram of 8255A PPI with neat diagram **[4+4]**

7. With a neat timing diagram and an appropriate example, explain the operation of 8255 PPI in mode-2. You should clearly show the necessary control signals and an interfacing circuit to connect 8255 PPI to 8085 microprocessor. Also write the necessary control words to configure the 8255 in this fashion. **[3+3+2]**

8. 8255 is operated in mode0. PortA and PortCupper are designed as output for LEDs and PortB and PortClower as input ports for DIP switches. Address line A15 is connected with $\overline{CS}$ of 8255 through inverter. **[2+2+1+3]**

a. Draw the complete mapping diagram.
b. Determine the port addresses
c. Determine the control word.
d. Write a program to read the DIP switches and display the reading from portB at portA and PortClower at PortCupper.

9. Illustrate digital transmission using modem and standard phone lines, explain check sum error detection technique with suitable example **[6]**

10. Explain how communication takes place between DB9 port and DB25 port using null modem connection. **[4]**

11. Describe the functions of RS232C signals used in handshaking. Why RS422A can transfer data in longer distance and at higher rate than RS232C and RS423A? Explain USB-OTG in brief. Discuss the type of data packets in USB Protocols. **[3+3+1+5]**