Code No: 07A7EC43 | **R07** | **Set No. 2**

IV B.Tech I Semester Examinations,MAY 2011
MICROPROCESSORS AND MICRO CONTROLLERS
Common to Mechatronics, Automobile Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) Explain the read cycle operation of 8086 in maximum mode operation.

   (b) Explain write cycle operation of 8086 in maximum mode operation.   [8+8]

2. (a) Give the software details of interfacing of 7-segment displays to 8051 Micro-controller with time-multiplexing and display select mechanism.

   (b) Give the hardware details of interfacing of 7-segment displays to 8051 Micro-controller with time-multiplexing and display select mechanism.   [8+8]

3. (a) Draw the pin diagram of 8051 and define the pins of port 3?

   (b) Draw and discuss the PSW of 8051?   [8+8]

4. (a) Write an ALP to find out transpose of a 3×3 matrix.

   (b) Write a progress to implement FOR loop using 8086 instructions.   [10+6]

5. (a) Explain the pin structure of RS232C and also discuss about voltage and current specifications of RS 232C.

   (b) Describe important features of 8251 USART.   [8+8]

6. (a) Explain the bit definations of mode set register for 8257 controller.

   (b) Explain the bit definitions of status register for 8257 controller.   [8+8]

7. (a) Describe the control structructure for loopung and for decision blocks.

   (b) Explain passing the parameters onto stack space in a routine.   [10+6]

8. (a) Using a typical 12-bit DAC, generate a step wave form of duration 1 sec , maximum 3 volts and determine the duration of each step suitably.

   (b) Write the pin diagram of DAC 0800.   [12+4]

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Code No: **07A7EC43** $\boxed{\textbf{R07}}$ $\boxed{\textbf{Set No. 4}}$

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Time: 3 hours   Max Marks: 80
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1. (a) Explain various DEBUG commands for troubleshooting executable programs?
   (b) Write an ALP to perform BCD addition of two 16 bit numbers.   [8+8]

2. (a) Draw and discuss the status register of 8257?
   (b) Discuss the priorities of DMA request inputs of 8257?   [8+8]

3. (a) Discuss about the memory segmentation in 8086 processor.   [10+6]
   (b) What is the function of Flag register? Describe about the significance of each flag bit.

4. (a) What are the advantages of digital processing over analog processing?
   (b) Draw the circuit diagram for ADC AD571 and DAC Interfacing with micro-controller 8051.
   (c) Discuss the criteria in selecting an Analog-to-digital converter.   [2+6+8]

5. (a) Explain the role of $\overline{PSEN}$, $\overline{EA}$ and DPTR.
   (b) Interface 8255 I/O ports with 8051. Give the memory map. The address of port A should be 0000H.   [6+10]

6. (a) What are the hardware interputs related to external sources in 8051/52 families?
   (b) Explain how do you disable all interrupts during a critical region in a program.   [8+8]

7. (a) Explain about the programmed I / O.
   (b) Explain about the interrupt driven I / O.   [8+8]

8. (a) Write an 8086 instruction sequence for transmitting the characters using 8251 on a polled basis.
   (b) Write an 8086 instruction sequence for receiving 100 characters using 8251 on a polled basis and store them in memory at location 2050H.   [8+8]

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$\star\star\star\star\star$

1. (a) Draw the pin diagram of 74LS573 latch and write 8051 program to output the data on port P1. Use P3.0 for latch pin.

   (b) Explain the interfacing of the external program memory to 8051 using 74LS573 latch with a neat diagram and draw the waveforms. [8+8]

2. (a) What is the advantage of using the CPU register for temporary data storage over using a memory location?

   (b) Differentiate between maximum and minimum mode operations of 8086 processor

   (c) Discuss about the immediate addressing mode of 8086 with examples.
   [3+8+5]

3. (a) What is an interrupt? What are the different types of interrupts available in 8051? Mention the interrupt subroutine address mechanism?

   (b) Explain the bit format of IE register? [8+8]

4. (a) Write a program to implement WHILE condition using 8086 instrctions

   (b) Write a program to generate a delay of 1 ms. [10+6]

5. (a) Explain the following instructions?
       i. ANL P0, #0Fh
      ii. CPL A
     iii. CLR ACC.5
      iv. XRL add, #n

   (b) Write 8051 program to OR the contents of ports 1 and 2, put the result in external RAM location 0102h. [8+8]

6. (a) Explain the priorities of DMA requests

   (b) Explain the interfacing of 8257 with 8086. [6+10]

7. (a) Explain the steps involved in trouble shooting a simple 8086-based Microcomputer?

   (b) What is a prototype model and what are the requirements you adopt in any prototype model to be developed. [10+6]

8. (a) Interface 8255 with 8086 so as to have a port A address 00H ,port B address 01H, port C address 02H and CWR address 03H.

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(b) Explain the BSR mode of operation of 8255. [12+4]

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R07

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MICROPROCESSORS AND MICRO CONTROLLERS
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Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
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1. (a) Why does a 16 segment arrengement used to display a character?

   (b) How can we use the incremental shaft angle encoder to measure the motor speed every second.   [8+8]

2. (a) Give the features of 8051 microctroller.

   (b) Explain the following pins of 8051.
       i. AD_0 - AD_7
       ii. T_0 and T_1
       iii. INT0 and INT1
       iv. TxD and RxD   [8+8]

3. (a) What are the DOS function calls.

   (b) Write an ALP to disply message 'Happy birth day!' on the screen with a key 'A' is pressed.   [8+8]

4. (a) How does 8051 process generate the ISR address on an un-masked interrupt?

   (b) Describe multiple interrupt sources in 8051. What are the sources that have been grouped together.   [6+10]

5. Explain the internal architecture of 8259 PIC with a neat block diagram.   [16]

6. (a) Explain the construction of stepper motor in brief.

   (b) Design a stepper motor controller and write an ALP to rotate shaft of a 4-phase stepper motor with 200 rotor teeth, for 5 rotations in clockwise direction.
                                                                          [6+10]

7. (a) Discuss the physical memory organization of 8086 processor.

   (b) Explain any four memory transfer instructions of 8086.   [8+8]

8. (a) Write an 8086 instruction sequence for transmitting 50 characters which are stored from the location 2010H using 8251.

   (b) Write an 8086 instruction sequence for receiving 50 characters using 8251 and store them in memory at location 2080H.   [8+8]

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