Code No: V3221/R07

Set No: 1

III B.Tech II Semester Regular & Supplementary Examinations, April/May - 2012
MICRO PROCESSORS AND INTERFACING
(Common to Electronics and Communications Engineering & Electronics and Instrumentation Engineering & Bio Medical Engineering)

Time: 3 Hours   **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. (a) List the main features of 8085 microprocessor. Draw and explain the flag register of 8085 microprocessors.
   (b)List and explain the general purpose registers of 8086 microprocessor. Also explain its special functions.   [8+8]

2. Write an assembly language program in 8086 to perform addition, subtraction, multiplication and division of the given operands. Perform BCD operation for addition and subtraction.   [16]

3. Draw the functional pin diagram of 8086 microprocessor and explain the functions of each pin.   [16]

4. (a) What is BSR mode of operation of 8255? Explain.
   (b) Write an assembly language program in 8086 to generate a saw tooth wave with 1 KHz frequency? Give the necessary circuit set up with a DAC.   [6+10]

5. (a) What is an interrupt? What are different interrupts available in 8086? Explain the interrupt structure of 8086 microprocessor.
   (b) Discuss about the interrupt priority schemes used in 8259.   [10+6]

6. (a) Discuss the serial data transmission standards and their specifications.
   (b) With a neat block diagram, explain the architecture of 8251 USART.   [6+10]

7. (a) What is meant by paging? Explain its advantages and disadvantages.
   (b) Explain the procedure of converting linear address into physical address.   [8+8]

8. (a)What is a microcontroller? With a neat block diagram, explain the architecture of 8051 microcontroller.
   (b) Explain the interrupt structure of the 8051 microcontroller.   [10+6]

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1. (a) Draw the flag register of 8086 microprocessor. Also explain each flag with suitable
   examples.
   (b)List and explain the different addressing modes of 8086 microprocessor with suitable
   examples.   [8+8]

2. (a) Write an assembly language program in 8086 to decide whether the parity of a given
   number is even or odd. If parity is even set DL to 00; else, set DL to 01.
   (b) Write an assembly language program in 8086 to convert four digit octal number to
   decimal number.   [8+8]

3. (a) Explain the interfacing of static RAMs to 8086 with neat interface diagram.
   (b) What is DMA? What is the need for DMA? Discuss in detail about the DMA data
   transfer scheme.   [8+8]

4. (a) Draw the architecture of 8255 and explain different modes of operation.
   (b) Interface an 8x8 keyboard two 8255 ports and write a program to read the code of a
   pressed key.   [8+8]

5. (a) What is an interrupt? Discuss in detail about the interrupt structure of 8086.
   (b) Draw and explain the interrupt vector table of 8086 microprocessor.   [8+8]

6. (a) Discuss the asynchronous and synchronous data transfer schemes.
   (b) Write an 8086 instruction sequence for receiving 100 characters using 8251 USART
   and store them in the memory.   [8+8]

7. (a) Explain the real mode and protected mode operations of 80386 microprocessor.
   (b) What are RISC and CISC processors? Compare RISC and CISC processors.   [8+8]

8. (a) Differentiate between microprocessors and microcontrollers.
   (b) List and explain different addressing modes of 8051 microcontroller with suitable
   examples.   [6+10]

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Set No: 3

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Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks
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1. What is segmentation? What are its advantages? Explain in detail the memory organization of 8086 microprocessor. [16]

2. (a) Write an assembly language program in 8086 to convert four digit hexadecimal number to decimal number.
   (b) Write an assembly language program in 8086 to find the factorial of the given number. [8+8]

3. (a) Explain the maximum mode operation of 8086 microprocessor with corresponding read and write cycle timing diagrams.
   (b) What is DMA? Explain the need for DMA in Microprocessor based systems. [10+6]

4. (a) Explain the control word format of 8255 in I/O mode and BSR mode.
   (b) Interface DAC AD7523 with an 8086 CPU running at 8MHz and write an assembly language program to generate a sawtooth waveform of period 1ms with V_{max} 5V. [8+8]

5. What is the need for interrupt controller? Draw and explain the architecture of 8259 Programmable Interrupt Controller. [16]

6. (a) Discuss the types of serial communication.
   (b) Explain the interfacing of 8251 with 8086 with necessary circuit diagram. [8+8]

7. (a) List the salient features of the 80386 microprocessor.
   (b) Explain the real mode and protected mode operations of 80386 microprocessor. [6+10]

8. (a) Explain the memory organization of 8051 microcontroller.
   (b) Explain in detail about serial port operation in 8051 microcontroller. [8+8]

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Set No: 4

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Time: 3 Hours   **Max Marks: 80**

Answer any FIVE Questions
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1. (a) List and explain different arithmetic instructions of 8086 microprocessor.
   (b) What is a macro? Explain with an example.   [10+6]

2. (a) Write an assembly language program in 8086 to sort the given array of numbers in
   descending order using bubble sort.
   (b) Write an assembly language program in 8086 to display the string "Happy Birthday!"
   on the screen.   [8+8]

3. What is Direct Memory Access (DMA)? What is the need for DAM? Explain the
   interfacing of 8257 DMA controller with 8086 microprocessor.   [16]

4. Explain the interfacing of stepper motor with 8255. Write an assembly language program
   to rotate a 200 teeth, 4 pole stepper motor
      i) In clockwise 5 rotations and
      ii) In anticlockwise 6 rotations.   [16]

5. (a) What is the need for interrupt controller? Describe the main features of 8259 interrupt
   controller.
   (b) Distinguish between Master and Slave mode operation of 8259.   [8+8]

6. Draw and explain the asynchronous mode transmitter and receiver data formats of 8251.
                                                                           [16]

7. (a) Explain the salient features of Pentium processor. Also explain the memory system of
   the Pentium processor.
   (b) List and explain the new Pentium instructions.   [10+6]

8. Draw and discuss the formats and bit definitions of the following SFRs
      i)   PCON
      ii)   TCON
      iii) TMOD
      iv)   SCON   [4x4]

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