

Code No: V3128**R07****Set No: 1**

III B.Tech. I Semester Supplementary Examinations, November/December - 2012

MICROPROCESSOR AND INTERFACEING

(Common to Computer Science and Engineering & Information Technology & Electronics and Computer Engineering)

Time: 3 Hours**Max Marks: 80**Answer any FIVE Questions
All Questions carry equal marks

1. (a) Draw and compare the flag register of 8085 and 8086 microprocessors.
(b) Explain the physical address formation in 8086 microprocessor. [10+6]
2. (a) Write an assembly language program in 8086 to add two matrices of size 3x3.
(b) Write an assembly language program in 8086 to find the largest in a series of 8-bit numbers. [8+8]
3. Draw the functional pin diagram of 8086 microprocessor and explain the functions of each pin. [16]
4. What are different operating modes of 8255? Explain each of them. Also discuss how to determine the control word for 8255. [16]
5. (a) What is an interrupt? What are the hardware and software interrupts of 8086? Explain the interrupt structure of 8086 microprocessor.
(b) What is the purpose of IF flag in handling the interrupts. [10+6]
6. (a) Write a short note on RS232C standard.
(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 difference between the 80286 real address mode and PVAM. [8+8]
8. (a) What is a microcontroller? With a neat block diagram, explain the architecture of 8051 microcontroller.
(b) Explain with suitable examples, the addressing modes used by 8051 to access internal data memory. [10+6]

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1. (a) Explain the concept of segmented memory. What are its advantages?
(b) List and explain the different assembler directives of 8086 microprocessor. [8+8]
2. (a) Write an assembly language program in 8086 to find out the LCM of two numbers.
(b) Write an assembly language program in 8086 to add two numbers of 32-bits each. [8+8]
3. (a) Explain the maximum mode operation of 8086 microprocessor with corresponding read and write cycle timing diagrams.
(b) What is meant by DMA? What is its need? Explain the DMA data transfer scheme. [10+6]
4. (a) Draw the architecture of 8255 and explain different modes of operation.
(b) Write an assembly language program in 8086 to generate a saw tooth wave with 1KHz frequency? Give the necessary circuit set up with a DAC. [8+8]
5. (a) What is an interrupt? Which steps the 8086 follows to handle any interrupt? Also mention the priorities of interrupts in 8086.
(b) Draw and explain the interrupt vector table of 8086 microprocessor. [8+8]
6. (a) Draw the block diagram of 8251 and explain each block.
(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 procedure of converting linear address into physical address.
(b) What are RISC processors? Differentiate between RISC and CISC processors. [8+8]
8. (a) Differentiate between microprocessors and microcontrollers.
(b) What is an interrupt? Explain the interrupt structure of the 8051 microcontroller. [6+10]

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1. Draw the register organization of 8086 and explain the typical applications of each register. [16]
2. (a) Write an assembly language program in 8086 to find out the square root of an 8-bit number.
(b) Write an assembly language program in 8086 to find the factorial of the given number. [8+8]
3. (a) Explain the interfacing of static RAMs to 8086 with neat interface diagram.
(b) What is DMA? Explain the need for DMA in Microprocessor based systems. [10+6]
4. (a) Write the control word register (CWR) format of 8255 for BSR mode and explain.
(b) Sketch and explain the interface of PPI 8255 to the 8086 microprocessor. Interface 8 LEDs to the port B of 8255. Interface 8 keys to the port A. Write an assembly language program to read the key status and output on to the 8 LEDs. [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 serial data transmission standards and their specifications.
(b) Draw and discuss the block diagram of 8251. [8+8]
7. (a) Explain in detail the 80286 memory management features and task switching.
(b) Explain the descriptor table of 80386. [8+8]
8. Discuss various timer modes supported by the 8051 and write a program to initialize timer 0 in auto reload mode. [16]

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1. a) List and explain different string manipulation 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 add two ASCII numbers.
(b) Write an assembly language program in 8086 to display the string "Good Morning!" on the screen. [8+8]
3. What is the purpose of ALE, \overline{BHE} , $\overline{DT/R}$ and \overline{DEN} pins of 8086? Show their timing in the system bus cycle of 8086. [16]
4. Interface a 12-bit DAC to 8255 with an address map of 0800H to 0803H. The DAC provides output in the range of +5V to -5V. Write the instruction sequence
 - i. for generating a square wave with a peak to peak voltage of 2 V and the frequency will be selected from memory location "FREQ".
 - ii. for generating a triangular wave with a maximum voltage of +5V and a minimum voltage of 0V. [16]
5. (a) What is the need for interrupt controller? Explain the features of programmable interrupt controller 5259A with its block diagram.
(b) Describe the action taken by 8086 where INTR pin is activated. [10+6]
6. What do you mean by I/O mapped I/O? Draw and discuss the interfacing of 8251 with 8086 in I/O mapped I/O mode. [16]
7. (a) Write a note on virtual 8086 mode of 80386.
(b) Explain the salient features of Pentium processor. Also explain the memory system of the Pentium processor. [8+8]
8. Draw and discuss the formats and bit definitions of the following SFRs
 - i. TCON
 - ii. PCON
 - iii. TMOD
 - iv. SCON[4+4+4+4]
