

III B. Tech II Semester Regular/Supplementary Examinations, April - 2017**MICROPROCESSORS AND MICROCONTROLLERS**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answering the question in **Part-A** is compulsory
 3. Answer any **THREE** Questions from **Part-B**

PART -A

- | | | | |
|---|----|--|------|
| 1 | a) | What is the purpose of READY and TRAP pins in 8085 Microprocessor? | [3M] |
| | b) | What is the use of MN/MX signals in 8086? | [4M] |
| | c) | List the alternative functions assigned to Port 3 pins of 8051 microcontroller | [4M] |
| | d) | List the operating modes of 8255A PPI? | [4M] |
| | e) | What is the importance of special function registers(SPF) in 8051? | [4M] |
| | f) | How much current is needed to drive an LED? | [3M] |

PART -B

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|---|----|--|-------|
| 2 | a) | Discuss about the memory segmentation in 8086 processor. | [8M] |
| | b) | What is the function of Flag register? Describe about the each flag bit. | [4M] |
| | c) | List basic features of 80286 microprocessor. | [4M] |
| 3 | a) | Draw the timing diagram for op-code fetch machine cycle and memory read machine cycle. | [8M] |
| | b) | Write a program with a flowchart to multiply two 8-bit numbers. | [8M] |
| 4 | a) | Write a program to implement FOR loop using instructions of 8086. | [8M] |
| | b) | Give the assembly language implementation of the following:
(i) FOR LOOP (ii) REPEAT (iii) IF-THEN-ELSE | [8M] |
| 5 | a) | Explain the cascaded mode operation of 8259 with a neat block diagram. | [10M] |
| | b) | Write about operational command word of 8259. | [6M] |
| 6 | a) | Explain the arithmetic and logic instruction of 8051 microcontroller with example. | [10M] |
| | b) | Explain the different addressing modes of 8051. | [6M] |
| 7 | a) | Explain interfacing of 8051 micro controller with LED's. | [10M] |
| | b) | Explain the keyboard interfacing using 8051. | [6M] |

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PART -A

- 1 a) If the stack segment register contains 3000h and stack pointer register contains 8434h, what is the physical address of the top of the stack in 8086 microprocessor? [3M]
- b) What information is conveyed when Qs1 and Qs0 are 01? [4M]
- c) Mention the size of DPTR and Stack Pointer in 8051 microcontroller. [3M]
- d) Write the input/output feature in Mode 0 for the 8255A PPI? [4M]
- e) What is the advantage of microcontroller over microprocessor? [4M]
- f) Name any two types of A to D converters. [4M]

PART -B

- 2 a) Explain 8086 architecture with neat diagram and also explain register organization. [8M]
- b) Explain the segmented memory organization structure of 8086 and also discuss the advantages. [4M]
- c) List basic features of 80286 microprocessor. [4M]
- 3 a) Draw the timing diagram for op-code fetch machine cycle and memory read machine cycle. [8M]
- b) Draw and explain timing diagram of memory write operation. [8M]
- 4 a) Write an ALP to find the multiplication of two 16-bit Hex numbers? [10M]
- b) Give the assembly language implementation of the following: [6M]
 (i) FOR LOOP (ii) REPEAT (iii) IF-THEN-ELSE
- 5 a) Draw block diagram of 8255 and explain its modes of operation. [8M]
- b) Show the control word format of 8255 and explain how each bit is programmed? [8M]
- 6 a) Explain the architecture of 8051 with its diagram. [8M]
- b) Explain the different addressing modes of 8051. [8M]
- 7 a) Explain interfacing of Seven Segment display with 8051 micro controller. [10M]
- b) Draw and explain the ADC interfacing using 8051. [6M]

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PART -A

- | | | | |
|---|----|--|------|
| 1 | a) | How the identified memory segment is accessed by 8086 microprocessor? | [3M] |
| | b) | Write the size of physical memory and virtual memory of 8086 microprocessor. | [4M] |
| | c) | Mention the size of DPTR and Stack Pointer in 8051 microcontroller. | [4M] |
| | d) | What is USART? | [4M] |
| | e) | What are the features of 8051 microcontroller? | [3M] |
| | f) | Name any two types of A to D converters. | [4M] |

PART -B

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|---|----|--|-------|
| 2 | a) | Draw the signal configuration of 8086 and explain the purpose of each signal. | [8M] |
| | b) | List basic features of 80386 microprocessor. | [4M] |
| | c) | Discuss the features of 80486 microprocessor. | [4M] |
| 3 | a) | Discuss about instruction format and different addressing modes of 8086. | [8M] |
| | b) | Draw the timing diagram for op-code fetch machine cycle and memory read machine cycle. | [8M] |
| 4 | a) | Write an 8086 Assembler Program that adds two given 4-digit BCD numbers. | [8M] |
| | b) | What is a MACRO? How do you pass parameters to MACRO's? | [8M] |
| 5 | a) | What are the registers available in 8257? What are their functions? | [8M] |
| | b) | Discuss about the initialization command words of 8259 and their sequence in detail. | [8M] |
| 6 | a) | Explain the architecture of 8051 with its diagram. | [8M] |
| | b) | Explain the modes of operation of Timer unit in 8051 Microcontroller. | [8M] |
| 7 | a) | How to interface a 7 segment display using 8051 microcontroller. | [10M] |
| | b) | Explain how interrupts are handled in 8051. | [6M] |

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PART -A

- | | | | |
|---|----|---|------|
| 1 | a) | Specify the size of data, address, memory word and memory capacity of 8086 Microprocessor | [3M] |
| | b) | Differentiate between maximum mode and minimum mode of 8086. | [4M] |
| | c) | List the alternative functions assigned to Port 3 pins of 8051 microcontroller. | [4M] |
| | d) | What is keyed bouncing? | [3M] |
| | e) | What is the advantage of microcontroller over microprocessor? | [4M] |
| | f) | How much current is needed to drive an LED? | [4M] |

PART -B

- | | | | |
|---|----|--|-------|
| 2 | a) | Discuss in-detail about instruction set of 8086 microprocessor. | [4M] |
| | b) | What is instruction pipelining? | [8M] |
| | c) | List basic features of 80286 microprocessor. | [4M] |
| 3 | a) | Discuss about instruction format and different addressing modes of 8086. | [8M] |
| | b) | Draw the timing diagram of I/O read cycle | [3M] |
| | c) | Give two examples for logical and branch instructions of 8086. | [5M] |
| 4 | a) | Write an ALP to find the multiplication of two 16-bit Hex numbers? | [8M] |
| | b) | What is a MACRO? How do you pass parameters to MACRO's? | [8M] |
| 5 | a) | Explain the architecture and operation of 8257 DMA controller with a neat block diagram. | [8M] |
| | b) | Explain the functions of following signals of 8257
(i) HLDA (ii) AEN (iii) MARK (iv) MEMR | [8M] |
| 6 | a) | Write a program based on 8051 instruction set to pack array of unpacked BCD digits. | [10M] |
| | b) | Explain the data types and assembler directives of 8051. | [6M] |
| 7 | a) | Explain interfacing of Seven Segment display with 8051 micro controller. | [10M] |
| | b) | Draw and explain the DAC interfacing using 8051. | [6M] |
