

Code: 15A04407

R15

B.Tech II Year II Semester (R15) Supplementary Examinations December 2017

MICROPROCESSORS & INTERFACING

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Write any two differences between microprocessors and microcontrollers.
 - List all the 16-bit registers of the 8085 microprocessor.
 - What is the need for interfacing I/O devices to the microprocessor?
 - Difference between inter segment and intra segment jumps in 8086.
 - Mention the advantages of modular programming.
 - Define interrupt handler.
 - List and define the internal registers in the 8259.
 - Compare simplex and duplex transmission.
 - Give at least two situations in which the overflow flag is set in 8051.
 - What is the need for bit addressing in 8051?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Explain the architecture of the 8085 microprocessor with the help of its internal block schematic diagram.
- OR**
- 3 (a) Write the operation carried out when the 8085 executes the instruction RST.
(b) Discuss the different memory segments used in 8086 and their functions.

UNIT – II

- 4 What are the functions of the REP and REPE prefixes used with string instructions in the 8086? Explain.
- OR**
- 5 (a) Explain any three memory addressing modes supported by 8086 microprocessor with examples.
(b) List the different steps performed by the 8086 when it executes the XLAT instruction. What is the use of XLAT?

UNIT – III

- 6 Discuss the term video services. Enlist and explain the video services provided by BIOS.
- OR**
- 7 (a) Write a program to display the keyboard status.
(b) How the multiplexed address bus in the 8086 separated into address bus and data bus? Draw the diagram for the same.

UNIT – IV

- 8 Explain how the 8259 communicate with the 8086. Explain different functions available in the priority interrupt controller.
- OR**
- 9 (a) Find the data direction and the modes of operations of ports of the 8255 if the control word written is 80H.
(b) Give examples of I/O devices that can be interfaced with DMA.

UNIT – V

- 10 (a) Name the programming constructs where CJNE can be used. Explain each of them.
(b) Explain mode 0 operations of the 8051 timers.
- OR**
- 11 How many operating system modes are available in the serial port of the 8051? Explain the differences among them.

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PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List any four features of 8086 microprocessor.
 - State the significance of LOCK signal in 8086.
 - Differentiate near jump from far jump in 8086.
 - How signal stepping can be done in 8086?
 - Can the 8086 processor operate on more than one instruction at a time? If so explain how it is done?
 - If BH = 0F3H, what is the value of BH in hex after the instruction SAR BH, 1?
 - Using two 8259-interrupt controllers what is the maximum number of peripherals that can be provided with interrupt facility.
 - Name the two modes used by the DMA processes to transfer data.
 - List the features of the parallel ports of 8051 microcontroller.
 - Which of the following are illegal:
(i) ADD R3, #50H? (ii) ADD A, #50H? (iii) ADD R7, R4H? (iv) ADD A, #255H? (v) ADD A, R5H?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Draw the internal architecture of 8086 microprocessor and explain its bus interface unit (BIU).
- OR**
- 3 Explain the classification of the instruction set of 8085 microprocessor with suitable examples.

UNIT – II

- 4 Explain about the following assembler directives: END P, EQU, EVEN, EXTRN with examples.
- OR**
- 5 Explain the addressing modes of 8086 with examples.

UNIT – III

- 6 Describe interrupts and interrupt response of an 8086 family process with neat sketch.
- OR**
- 7 Explain the following:
- Interfacing printer with 8086.
 - Formation of system bus.

UNIT – IV

- 8 Discuss the organization and architecture of 8255 programmable peripheral interface with its functional block diagram.
- OR**
- 9 How to interface a DMA controller with a microprocessor? Explain how DMA controller transfers large amount of data from one memory locations to another memory location.

UNIT – V

- 10 With a neat sketch, explain the architecture of 8051.
- OR**
- 11 Discuss in detail about parallel I/O ports in 8051 microcontroller and explain how these ports are accessible for specific applications.

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B.Tech II Year II Semester (R15) Regular Examinations May/June 2017

MICROPROCESSORS & INTERFACING

(Computer Science & Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- List four categories of 8085 instructions that are used for data manipulation.
 - How many memory locations can be addressed by a microprocessor with 14 address lines?
 - What is the difference between the short and near jumps in 8086?
 - Define macro. Give an example.
 - What is the memory address space in 8086?
 - Write the different forms of the IN instruction in 8086.
 - Compare serial and parallel communications.
 - List the various operating modes of the 8253.
 - What does a '0' in the zero flag after an arithmetic operation mean?
 - Where are the registers R0-R7 located in the 8051 microcontroller?

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 Draw and explain the register organization of the 8086 and explain typical applications of each register.
- OR**
- 3 (a) How are clock signals generated in the 8085? What is the frequency of the internal clock? Explain.
(b) Compare the instruction CALL and PUSH.

UNIT - II

- 4 Explain the functions of the assembler directives PTR, TYPE, SHORT, GLOBAL and LOCAL with examples for each.
- OR**
- 5 (a) Discuss the function of the LOCK prefix used with an 8086 instruction.
(b) Describe the different program memory addressing modes in the 8086 giving an example for each.

UNIT - III

- 6 Draw a circuit showing the generation of I/O read and write control signals in the minimum mode operations of the 8086.
- OR**
- 7 (a) Discuss techniques for developing programs to handle operations of I/O devices.
(b) Explain the functions IC 74244 and IC 74245.

UNIT - IV

- 8 Draw a block diagram of the 8259 and explain how it can be used for increasing the interrupting capabilities of the 8086.
- OR**
- 9 (a) Find BSR control words for setting PC4 pin and resetting PC2 pin in the 8255.
(b) Discuss the different modes of operation in the 8237.

UNIT - V

- 10 (a) Why microcontrollers are often called single chip computers? Explain.
(b) Write a program to arrange a block of binary numbers in ascending order.

OR

- 11 Explain interfacing of push button switches and LEDs with the 8051 microcontroller.

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MICROPROCESSORS & INTERFACING

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PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- How does the microprocessor differentiate between data and instruction?
 - If the frequency of the crystal connected to 8085 is 6 MHz, calculate the time to fetch and execute NOP instruction.
 - Differentiate between absolute and linear select decoding.
 - How 16-bit address is converted into 20-bit address in 8086.
 - State the function of MIN/MAX pin in 8086.
 - If AL = 78H and BL = 73H, explain how DAS instruction (after subtracting BL from AL) adjusts to the BCD result.
 - Write the format of ICW1 in 8259.
 - Name the six modes of operations of an 8253 programmable interval timer.
 - In the program status word of 8051, the bits RS0 and RS1 are 1 and 0, then which register bank is selected for operation.
 - What is the size of the on-chip program memory and on-chip data memory of 8051 microcontroller?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Write an assembly language program to convert an array of ASCII code to corresponding binary (hex) value. The ASCII array is stored starting from 4200H. The first element contains number of elements in the array.

OR

- 3 Explain the architecture of Intel 8085 with the help of a block diagram.

UNIT – II

- 4 Explain the internal hardware architecture of 8086 microprocessor with a neat diagram.

OR

- 5 Explain any 8 addressing modes of 8086 processor with an example.

UNIT – III

- 6 Write an 8086 assembly language program to get an input from the keyboard for 2 Digits and convert that input into a hexadecimal number using BIOS interrupts with sample output.

OR

- 7 Explain how static RAM is interfaced to 8086. Give necessary interface diagram assuming appropriate signals and memory size.

UNIT – IV

- 8 Explain the Traffic light controller and write a program in 8086 processor to interface traffic light controller and processor.

OR

- 9 Explain the transistor buffer circuit used to drive 7 segment LEDs.

UNIT – V

- 10 Draw a diagram to interface a stepper motor with 8051 microcontroller and explain. Write a program to make the stepper motor to rotate both clockwise and anticlockwise directions.

OR

- 11 Write 8051 ALP to transmit 'Hello World' to PC at 9600 baud for external crystal frequency of 11.0592 MHz.
