Hall Ticket Number:

Code No.: 22518 AS

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (I.T.) II Year II-Semester Advanced Supplementary Examinations, June/July-2017

Microprocessor and Microcontroller

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. List and specify the functions of various control signals generated by control unit of 8085 microprocessor.
2. How many flags are there in flag register of 8085 microprocessor? Give significance of each.
3. List few interrupts of 8085 microprocessor.
4. Define absolute and partial address decoding.
5. Write the differences between synchronous and asynchronous transmission.
6. Differentiate between SJMP and LJMP of 8051 microcontroller.
7. Draw and give brief introduction of TCON special function register of 8051 microcontroller.
8. Show the format of IP and IE special function registers.
9. Give two applications of 8051 microcontroller.
10. Write the importance of RTOS in Embedded applications.

Part-B (5 × 10 = 50 Marks)
(All bits carry equal marks)

11. a) Define instruction cycle, Machine cycle and T-State and Draw the instruction cycle timing diagram for the following instructions:
    i) LDA 4300 *ii)* MVI B, 23
    b) Explain various addressing modes of 8085 microprocessor.

12. a) Design an interface circuit 16 k bytes of SRAM and 8 k bytes of ROM to 8085 processor. Also draw Address Map.
    b) Draw the block diagram of DMA controller. Explain its signal functions.

13. a) Explain modes of operations of programmable interval timer 8254 in detail with neat diagrams.
    b) Explain 8051 microcontroller architecture with a neat diagram.

14. a) Discuss in detail serial data communication of 8051 microcontroller.
    b) Describe the following pin functions of 8051 microcontroller.
    i) $\overline{RD}$ ii) $\overline{WR}$ iii) $\overline{PSEN}$ iv) ALE v) TXD

15. a) Explain in detail data acquisition systems.
    b) Draw the interface circuit to interface DAC to 8051 microcontroller and write a program to generate a square wave.

Contd... 2

16. a) Write a program for 8085 processor to convert series of hexadecimal numbers stored in memory in to equivalent BCD, store the result in memory.

    b) Explain interfacing of switches to 8085 microprocessor.

17. Answer any *two* of the following:

    a) Distinguish between microprocessors and microcontrollers.

    b) Memory organization of 8051 microcontroller.

    c) Development aids and troubleshooting techniques.

Hall Ticket Number:

Code No. : 22512

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (I.T.) II Year II-Semester Main & Backlog Examinations, May-2017

Microprocessor and Microcontroller

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. List out the advantages of assembly languages in comparison with high level languages
2. Why address and data bus is multiplexed in 8085 microprocessor.
3. Draw the interface circuit to interface 8255 to 8085 processor, by assuming address of port A 80, port B 81, port C 82 and control word register as 83.
4. Draw the I/O control word format of 8255, describe each bit.
5. Give short description of serial I/O lines of 8085 processor.
6. List out two bit-level logical operations of 8051 microcontroller with examples.
7. Draw the formats of SCON and PCON registers of 8051 microcontroller.
8. Draw the format of FLAG register of 8051 microcontroller and briefly explain each bit.
9. What are signal conditioning circuits?
10. Write short notes on transducers.

Part-B (5 × 10 = 50 Marks)
(All bits carry equal marks)

11. a) Explain with neat diagram, the architecture of 8085 microprocessor.
    b) Explain CALL and RET instructions of 8085 processor in detail.

12. a) Write the initialization instruction sequence for 8259 for the following specifications:
        i) Single 8259
        ii) Call address interval 4
        iii) Edge triggered interrupts
        iv) AEOI mode set
        v) IR0 request ISR address 2000
        vi) IR2 request masked
    b) Discuss in detail hardware interrupts and restart instructions of 8085 processor.

13. a) Draw the block diagram of 8251 USART. Explain in detail asynchronous and synchronous transmission and reception of 8251.
    b) Write a program to multiply two, 8 bit numbers using 8051 microcontroller.

14. a) Explain timer/counter operations of 8051 microcontroller in detail.
    b) Explain in detail how external memory is interfaced in 8051 microcontroller.

15. a) Explain in detail Relays and optcouplers.
    b) Interface ADC to 8051 microcontroller. Write a program to convert analog signal to digital signal.

Contd... 2

16. a) Explain PUSH and POP instructions of 8085 microprocessor in detail.
    b) Write the differences between I/O mapped I/O and Memory mapped I/O.

17. Write short notes on any ***two*** of the following:
    a) Loop, conditional and unconditional branch instructions of 8051 microcontroller.
    b) Interface 16 key matrix to microcontroller 8051. Write a program to generate a code of a pressed key.
    c) Embedded system design process with flow chart.

Code No. 3078 / O

FACULTY OF INFORMATICS

B.E. 2/4 (IT) II-Semester (Old) Examination, Nov. / Dec. 2016

Subject : Computer Organization and Microprocessor

Time : 3 hours **Max. Marks : 75**

Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.

PART – A (25 Marks)

1	Write the equation to measure the performance of a computer.	3
2	Mention the names of the registers that facilities communication with main memory.	2
3	Define the principle of locality of reference.	3
4	What is memory interleaving?	2
5	Name the registers that are modified after the execution of XCHG instruction.	2
6	What are the interrupt pins of 8085?	3
7	Name the instructions used for stack organization in 8085.	2
8	Explain the functions of HOLD and HLDA signals.	3
9	Specify the function of programmable interval timer (8254).	3
10	What is the function of 'Control Word Register'?	2

PART – B (50 Marks)

11	Explain how simultaneous requests from two or more devices can be handled.	10
12	With necessary diagram, show the address translation in virtual memory.	10
13	With suitable examples, explain various addressing modes supported by 8085.	10
14	Explain about the interfacing of 8085 with digital to analog converter.	10
15	Explain about the operation of programmable communication interface.	10
16	Write short notes on the following : a) DMA b) Cache memory organization	5+5
17	Write short notes on the following : a) Modes of operation of 8255 b) Branch instructions of 8085	5+5

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Code No. 3116 / N

FACULTY OF INFORMATICS

B.E. 2/4 (I.T.) II – Semester (New) (Suppl.) Examination, November / December 2016

Subject: Computer Organization & Microprocessors

Time: 3 Hours **Max.Marks: 75**

Note: Answer all questions from Part A. Answer any five questions from Part B.

PART – A (25 Marks)

1	Write about memory hierarchy	3
2	What is the role of DAA instruction and describe with example	2
3	What is the purpose of TLB?	3
4	Write primary features of 8259A	3
5	Discuss working of stacks and subroutines	3
6	Define virtual memory	2
7	List any two data transfer instruction	2
8	Differentiate RISC & CISC	3
9	Explain the following 8085 instructions with example i) ADCC ii) ORI 50H	2
10	List different types of interrupts in 8085	2

PART – B (5x10 = 50 Marks)

11	a) Explain interrupts service routine in detail. b) Write an ALP for 8085 to multiply two 8-bit numbers	4 6
12	Explain the following: a) SRAM, Synchronous and Asynchronous DRAM. b) Describe Bus Arbitration Techniques and explain its types.	 5 5
13	Discuss different types of addressing modes of 8085.	10
14	Write short notes on 8279 (Key board and Display controller).	10
15	Write short notes on 8254 CWR.	10
16	a) Discuss the metrics to measure the performance of memory system. b) Explain in detail DMA controller (8257).	5 5
17	Explain CWR of 8255 (PPI) in both BSR and I/0 mode.	10

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Hall Ticket Number:

Code No. : 2250

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. II Year (I.T.) II-Semester (Main) Examinations, May-2016

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. List the four categories of 8085 instructions that manipulate data.
2. Calculate the number of memory chips needed to design 8K byte memory if the chip size is 1024*8 bits.
3. Write instructions to load the Hexadecimal number 65H in register C, and 92H in Accumulator A. Display the number 65H at PORT0 and 92H at PORT1.
4. What are the commonly used priority modes that are available under software control in 8259 A?
5. Indicate the bit positions of PSW register of 8051.
6. Explain MUL, DIV instructions of 8051.
7. Draw the block diagram of two line 20 character LCD display.
8. Explain IE register of 8051.
9. What is a relay? Draw the diagram of connecting 8051 to a solid state relay.
10. Draw a flow diagram for getting data from the analog world to a microcontroller.

Part-B (5 × 10 = 50 Marks)

11. a) Draw the block diagram of 8085 and explain each block [6]
    b) Write the function of each of the following instruction and also indicate the machine cycles and T-states required i) LDA 2000 ii) PUSH B iii) SUB B [4]
12. a) What are the different ways of Interfacing peripherals to 8085? Elaborate. [5]
    b) Draw the circuit to interface 4096 R/W memory locations to 8085 µp and also draw the the address map. [5]
13. a) Explain the modes of operation of 8254. [6]
    b) List different category of instructions of 8051. Give 2 examples for each of them. [4]
14. a) Explain interfacing of Intelligent LCD display with microcontroller. [7]
    b) List different modes used to perform serial communication of 8051. [3]
15. a) What is ADC0809. Elaborate how to interface it with 8051. [7]
    b) List the applications of Microcontroller. [3]
16. a) List 8085 hardware and software interrupts and explain. [7]
    b) Write the steps to interface a LED display with microprocessor. [3]
17. Write short notes on any *two* of the following:
    a) Explain the ports of 8051 and how they are programmed. [5]
    b) Give the bit positions of TMOD register and TCON register. [5]
    c) Why RTOS is preferred for an embedded application. [5]

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Hall Ticket Number:

Code No.: 22502 S

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. II Year (I.T.) II-Semester (Supplementary) Examinations, December-2016

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. List atleast two examples of 1 byte, 2 byte and 3 byte instructions.
2. How many address lines are used to identify an I/O port in the peripheral I/O and in the memory mapped I/O methods.
3. Examine the following program and specify the output at port 1, if the program is executed.

```
MVI B,82H
MOV A,B
MOV C,A
MVI D,37H
OUT PORT1
HLT
```

4. Indicate the bit positions of the control word in the control register of 8255.
5. Write the different addressing modes of 8051.
6. Distinguish between MOVC & MOVX instructions of 8051.
7. List the registers used to perform serial communication in 8051.
8. Draw register format of IP and explain each bit.
9. What is an opto-coupler? Give an interfacing circuit of controlling a lamp using it.
10. What is signal conditioning?

Part-B (5 × 10 = 50 Marks)

11. a) List the category of instructions performed by 8085 and give at least 2 examples for each of them. [5]

    b) Explain the pin functions of 8085 microprocessor. [5]
    i) READY ii) TRAP iii) IO/$\overline{M}$ iv) $\overline{RD}$ v) $\overline{WR}$

12. a) List and explain the operating modes of 8255A. [5]

    b) Explain the slave mode and master mode of DMA. [5]

13. a) With a block diagram explain serial data transmission & reception of 8251. [7]

    b) List the architectural features of 8051. [3]

14. a) Explain different modes of operation of timers and counters of 8051µc. [6]

    b) Draw the circuit to interface keyboard to 8051 and explain. [4]

15. a) What is DAC0808? How to interface it with 8051? [5]

    b) Explain about microprocessor development aids and troubleshooting techniques. [5]

(P.T.O.)

16. a) What are the different registers used in programming 8085. Give bit positions of Flag register. [7]

    b) Write about interfacing switches to a microprocessor. [3]

17. Write short notes on any *two* of the following:

    a) What are SFRs of 8051? Give a list of them. [5]

    b) Explain RS232 standard. [5]

    c) Draw a flow chart of embedded system design process and explain. [5]

Hall Ticket Number:

Code No. : 22502

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. II Year (I.T.) II-Semester (Main) Examinations, May-2016

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** questions from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. List the four categories of 8085 instructions that manipulate data.
2. Calculate the number of memory chips needed to design 8K byte memory if the chip size is 1024*8 bits.
3. Write instructions to load the Hexadecimal number 65H in register C, and 92H in Accumulator A. Display the number 65H at PORT0 and 92H at PORT1.
4. What are the commonly used priority modes that are available under software control in 8259 A?
5. Indicate the bit positions of PSW register of 8051.
6. Explain MUL, DIV instructions of 8051.
7. Draw the block diagram of two line 20 character LCD display.
8. Explain IE register of 8051.
9. What is a relay? Draw the diagram of connecting 8051 to a solid state relay.
10. Draw a flow diagram for getting data from the analog world to a microcontroller.

Part-B (5 × 10 = 50 Marks)

11. a) Draw the block diagram of 8085 and explain each block [6]
    b) Write the function of each of the following instruction and also indicate the machine cycles and T-states required i) LDA 2000 ii) PUSH B iii) SUB B [4]
12. a) What are the different ways of Interfacing peripherals to 8085? Elaborate. [5]
    b) Draw the circuit to interface 4096 R/W memory locations to 8085 µp and also draw the the address map. [5]
13. a) Explain the modes of operation of 8254. [6]
    b) List different category of instructions of 8051. Give 2 examples for each of them. [4]
14. a) Explain interfacing of Intelligent LCD display with microcontroller. [7]
    b) List different modes used to perform serial communication of 8051. [3]
15. a) What is ADC0809. Elaborate how to interface it with 8051. [7]
    b) List the applications of Microcontroller. [3]
16. a) List 8085 hardware and software interrupts and explain. [7]
    b) Write the steps to interface a LED display with microprocessor. [3]
17. Write short notes on any *two* of the following:
    a) Explain the ports of 8051 and how they are programmed. [5]
    b) Give the bit positions of TMOD register and TCON register. [5]
    c) Why RTOS is preferred for an embedded application. [5]

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Code No.: 15601

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (IT.: CBCS) V-Semester Main Examinations, December-2018

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Give the functions of RESET IN, SOD, Xl and X2 pins of 8085.	2	1	1	1
2.	Discuss the function of DAA instruction of 8085.	2	2	1	1
3.	Why are program counter and stack pointer are 16 bit registers?	2	3	1	1
4.	Write the differences between MACRO's and Procedures.	2	1	1	1
5.	What is key bouncing? Discuss a method for key de-bouncing.	2	2	3	1
6.	Write the initialization instruction sequence for 8255 to configure port A as bidirectional port and port B as input port in mode1.	2	3	3	1
7.	Draw the format of PSW and IP registers of 8051 microcontroller.	2	1	2	1
8.	Write the difference between forward jump and backward jump of branching instruction.	2	3	2	1
9.	Discuss the applications of microcontroller.	2	2	2	1
10.	Explain the importance of SBUF register in serial communication of 8051 microcontroller.	2	3	2	1
	Part-B (5 × 10 = 50 Marks)				
11. a)	Explain the architecture of 8085 with a neat block diagram..	6	2	1	1
b)	Draw the instruction cycle for the following instructions i) STA 2000 ii) IN 81	4	3	1	1
12. a)	Discuss about dedicated interrupts of 8086 processor and explain how interrupts being serviced in 8086.	5	2	1	1
b)	Write an 8086 ALP for converting Hexadecimal number in to BCD.	5	3	1	1
13. a)	Write a program to interface 4×4 keyboard to 8086 through ports A and B operating at I/O addresses 0FFF0 and 0FFE2. Draw the necessary interface details.	5	3	4	1
b)	With a neat block diagram, explain the working of 8257 DMA controller	5	2	3	1
14. a)	Explain the TMOD and TCON registers of 8051 microcontroller.	5	1	2	1
b)	Explain how interrupts are handled in 8051 and mention interrupt priorities.	5	2	2	1
15. a)	Draw the diagram to interface stepper motor with 8051 micro controller and write a program to rotate stepper motor continuously clock wise.	6	3	5	1
b)	Discuss the differences between various advanced processors.	4	2	1	1

Contd...2

16. a)	Explain data transfer and arithmetic instructions of 8085 with examples.	4	2	1	1
b)	Sketch the interfacing circuit for interfacing ADC with 8086 processor and write a programme to read analog signal.	6	3	5	1
17.	Answer any *two* of the following:				
a)	Discuss modes of operation of 8254 programmable timer	5	2	3	1
b)	Draw I/O port circuits of 8051 microcontroller and explain	5	2	2	1
c)	Sketch the interface circuit for interfacing DAC with 8051 microcontroller and write a programme for generating square wave.	5	3	5	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60%
2	Knowledge on application and analysis (Level-3 & 4)	40%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	---

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Hall Ticket Number:

Code No. : 15601 S

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (IT: CBCS) V-Semester Supplementary Examinations, May-2019

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. Why is 8085 processor called as an 8 bit processor-justify:
2. How can you generate MR, MW, and IOR and IOW control signals in 8085 microprocessor?
3. List the main functions of the BIU (Bus Interface Unit) of 8086 processor.
4. Write a program to find the factorial of 4 using 8086 microprocessor.
5. Write the difference between A/D and D/A converters?
6. Write the advantage and disadvantage of parallel communication over serial communication.
7. Write a delay program using 8051 instructions.
8. How many register banks are there in 8051 internal RAM? How to select the desired bank?
9. List the on-chip peripherals of 8051 microcontroller.
10. List out the 8051 default interrupt priorities.

Part-B (5 × 10 = 50 Marks)
(All sub-questions carry equal marks)

11.a) Explain the LDAX, XCHG, and DAD instructions of the 8085 with examples.
b) Differentiate between I/0 mapped I/0 and memory mapped I/0 in 8085.

12.a) Explain the concept of segmented memory. What are the advantages?
b) List out different assembler directives used in 8086 microprocessor with examples

13.a) Discuss about I/O mode of operation of 8255 programmable peripheral chip.
b) Explain about the architecture of 8251 USART with a neat sketch.

14.a) List and explain the logical group of instructions of 8051 microcontroller with examples.
b) Draw the Internal RAM memory organization in 8051.

15.a) Discuss different modes of operation of the timers in 8051.
b) Explain how interface an 8- bit ADC with 8051 Micro-controller.

16.a) Draw the timing diagram of MVI B data. Indicate machine cycle, states, and modes of addressing.
b) Write an assembly language program to add two 16 bit numbers using 8086 processor.

17. Answer any ***two*** of the following:
a) Interface two 8K*8 RAM chips and two 8K*8 EPROM chips with 8086 so as to form a completely working system configuration.
b) Explain various types of jump instructions in 8051
c) Write an assemble language program for LED blinking in 8051 microcontroller.

Hall Ticket Number: scanned

Code No. : 14604 O2

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (IT) II Year II-Semester Old Examinations, May-2018

Microprocessors and Microcontroller

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. Define stack and stack related instructions.
2. Write an 8085 ALP to find one's compliment of a number stored at memory location 4400H and store the complimented number at memory location 4300H.
3. Differentiate between memory mapped I/O and I/O mapped I/O.
4. Write an instruction to enable all the interrupts in an 8085 microprocessor.
5. Differentiate between microcontroller and microprocessor.
6. List out the addressing modes of 8051 microcontroller.
7. Give the format of SCON register with small notes.
8. Mention interrupt priorities in 8051 microcontroller.
9. What are signal conditioning circuits?
10. Define relays. Mention the operations of few relays.

Part-B (5 × 10 = 50 Marks)

(All sub-questions carry equal marks)

11. a) Explain the various addressing modes of 8085 microprocessor.
    b) Write an 8085 ALP to find the sum of a series of numbers.
12. a) Draw the block diagram of 8255 and explain.
    b) Explain with a neat diagram programmable interrupt controller.
13. a) Discuss about USART with suitable diagram.
    b) Write short notes on programmable counter of 8085 microprocessor.
14. a) Describe the serial data communication modes of operation of 8051 microcontroller.
    b) Draw the formats of the fallowing registers of 8051:
    i) IP ii) IE iii) PSW iv) TCON
15. a) Interface DAC to 8051 microcontroller and write a program to generate square wave.
    b) Explain few trouble shooting techniques.
16. a) Write 8085 ALP to subtract two 8-bit numbers stored in memory locations 2200H and 2201H and store the result in memory locations.
    b) Explain the interfacing of switches with 8085 microprocessor.
17. Answer any *two* of the following:
    a) Discuss about Jump and Call instructions of 8051 microcontroller.
    b) Describe the modes of operations of timers in 8051 microcontroller.
    c) Explain RTOS for Embedded application.

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Code No.: 15601

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (IT.: CBCS) V-Semester Main Examinations, December-2018

Microprocessors and Microcontrollers

Time: 3 hours Max. Marks: 70

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Q. No	Stem of the Question	M	L	CO	PO
	Part-A (10 × 2 = 20 Marks)				
1.	Give the functions of RESET IN, SOD, Xl and X2 pins of 8085.	2	1	1	1
2.	Discuss the function of DAA instruction of 8085.	2	2	1	1
3.	Why are program counter and stack pointer are 16 bit registers?	2	3	1	1
4.	Write the differences between MACRO's and Procedures.	2	1	1	1
5.	What is key bouncing? Discuss a method for key de-bouncing.	2	2	3	1
6.	Write the initialization instruction sequence for 8255 to configure port A as bidirectional port and port B as input port in mode1.	2	3	3	1
7.	Draw the format of PSW and IP registers of 8051 microcontroller.	2	1	2	1
8.	Write the difference between forward jump and backward jump of branching instruction.	2	3	2	1
9.	Discuss the applications of microcontroller.	2	2	2	1
10.	Explain the importance of SBUF register in serial communication of 8051 microcontroller.	2	3	2	1
	Part-B (5 × 10 = 50 Marks)				
11. a)	Explain the architecture of 8085 with a neat block diagram.	6	2	1	1
b)	Draw the instruction cycle for the following instructions i) STA 2000 ii) IN 81	4	3	1	1
12. a)	Discuss about dedicated interrupts of 8086 processor and explain how interrupts being serviced in 8086.	5	2	1	1
b)	Write an 8086 ALP for converting Hexadecimal number in to BCD.	5	3	1	1
13. a)	Write a program to interface 4×4 keyboard to 8086 through ports A and B operating at I/O addresses 0FFF0 and 0FFE2. Draw the necessary interface details.	5	3	4	1
b)	With a neat block diagram, explain the working of 8257 DMA controller	5	2	3	1
14. a)	Explain the TMOD and TCON registers of 8051 microcontroller.	5	1	2	1
b)	Explain how interrupts are handled in 8051 and mention interrupt priorities.	5	2	2	1
15. a)	Draw the diagram to interface stepper motor with 8051 micro controller and write a program to rotate stepper motor continuously clock wise.	6	3	5	1
b)	Discuss the differences between various advanced processors.	4	2	1	1

Contd...2

16. a)	Explain data transfer and arithmetic instructions of 8085 with examples.	4	2	1	1
b)	Sketch the interfacing circuit for interfacing ADC with 8086 processor and write a programme to read analog signal.	6	3	5	1
17.	Answer any *two* of the following:				
a)	Discuss modes of operation of 8254 programmable timer	5	2	3	1
b)	Draw I/O port circuits of 8051 microcontroller and explain	5	2	2	1
c)	Sketch the interface circuit for interfacing DAC with 8051 microcontroller and write a programme for generating square wave.	5	3	5	1

M: Marks; L: Bloom's Taxonomy Level; CO: Course Outcome; PO: Programme Outcome

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60%
2	Knowledge on application and analysis (Level-3 & 4)	40%
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	---