	Utech
Name :	
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Invigilator's Signature :	

CS/B.Tech (ECE)/SEM-5/EI(EC)-502/2010-11 2010-11

MICROPROCESSOR & MICROCONTROLLER

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

- 1. Choose the correct alternatives for any ten of the following: $10 \times 1 = 10$
 - i) The control signal used to distinguish between an I/O operation and memory operation is
 - a) ALE

b) IO/M

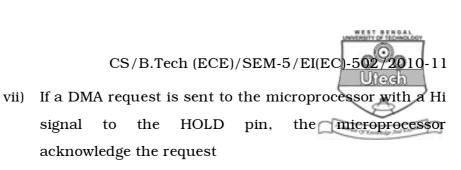
c) SID

- d) SOD.
- ii) The control signal, HOLD is sent by 8085 in order to
 - a) inform I/O device that the address is being sent over the AD line
 - b) achieve separation of address from data
 - c) synchronize with low speed peripheral
 - d) to activate DMA.

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iii)	In "JZ ne	"JZ next" instruction of 8051 microcontroller which					
	register's	register's content is checked to see if it is zero?					
	a) <i>A</i>		b) .	В			
	c) R1		d) .	R2.			
iv)	If Ready	pin is grounded, i	t will i	introduce			
	states	into the BUS	S су	cle of	8086/8088		
	microprocessors.						
	a) wait		b)	idle			
	c) wait	and remains idle	d)	all of thes	e.		
v)	Whenever the POP H instruction is executed a) data bytes in the HL pair are stored on the stack						
	b) two	data bytes at	the t	op of th	e stack are		
	transferred to the HL reg. pair						
	c) two	data bytes at	the t	op of th	e stack are		
	tran	transferred to the PC					
	d) two	data bytes from	n HL	reg. pai	r that were		
	previously stored on the stack are transferred back						
	to the HL registers.						
vi)	For 8255	PPI, the bidirec	tional	mode of	operation is		
	supported in						
	a) mod	e 1	b)	mode 2			
	c) mod	e 0	d)	either (a)	or (b)		



- a) after completing the present cycle
- b) immediately after receiving the signal
- c) after completing the program
- d) none of these.

viii) STA 9000H is a

- a) data transfer instruction
- b) logical instruction
- c) I/O and machine control instruction
- d) none of these.
- ix) The segment and offset address of the instruction to be executed by 8086 microprocessor are pointed by
 - a) CS and SI
- b) DS and IP
- c) CS and SP
- d) CS and IP
- x) The instruction register holds
 - a) flag conditions
 - b) instructions address
 - c) opcodes
 - d) none of these.

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- xi) For 8257 controller, the highest priority channel by default is
 - a) CH-0

b) CH-3

c) CH-1

- d) any channel.
- xii) Machine cycles in "CALL" instruction of 8085 CPU are
 - a) 6

b) 5

c) 4

d) 3.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

2. a) Explain the functions of pin as follows:

READY, ALE, RESET

- b) Can an input port and an output port have the same address? Justify. 3 + 2
- 3. a) How does the microprocessor differentiate between data and instruction?
 - b) Explain the need to demultiplex the bus AD7-AD0. How is demultiplexing done? 1+4
- 4. a) Write down the difference between flag register of 8085 microprocessor and flag register of 8086 microprocessor.
 - b) How is sub-routine handled by microprocessor? 2 + 3

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- 5. a) Define addressing mode in 8085 microprocessor
 - b) How many addressing modes are available in 8085 microprocessor ? Explain with two examples each. 1+4
- 6. a) What is pipelined architecture? How is it implemented in 8086 microprocessor?
 - b) How many address lines are used for I/O mapped I/O technique in the context of interfacing with 8086 ? 1+2+2

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

- 7. a) Draw the timing waveform of Mode 1 input control signals of 8255.
 - b) Write an Assembly Language Programming in 8085 to interface a 8255 chip with Port B address DDh to scan Port A and send the data to Port B. Draw the logical circuit diagram.
- 8. a) What is software interrupt in 8085 microprocessor?
 - b) Explain the instruction SIM & RIM in 8085 microprocessor.

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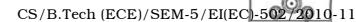
- c) What is RST instruction of 8085 μP ? Draw the logical circuit for RST 6 interrupt and write the corresponding Assembly Language Programming. 2+5+1+3+4
- 9. a) Explain the function of different types of control and status signals of 8085 μP .
 - b) Explain the need to demultiplex the bus $AD_7 \cdot AD_0$ of 8085 $\mu P.$ What is the need of ALE signal in this purpose ?
 - c) What is fold back memory? Give an example.
 - d) if the 8085 μP clock frequency is 2 MHz then calculate the time required to execute the instruction STA 2000h. 4+3+4+4
- 10. a) What is interrupt vector table? Explain its structure.

 Explain the interrupt response sequence of 8086.
 - b) What is the interrupt vector address of the following interrupt in the 8086 IVT?
 - i) INTO
 - ii) NMI
 - iii) INT 21H.
 - c) How will you interface a stepper motor with 8086?

 Draw the interfacing circuit and flow-chart.

(1+2+3)+3+6

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- 11. Write short notes on any three of the following:
 - a) Addressing modes of 8051 microcontroller
 - b) 8259 Interrupt controller
 - c) Min/Max mode operations of 8086 microprocessor
 - d) Architecture of 8051 microcontroller
 - e) DMA data transfer scheme.

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