Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem Examination May-2024

CS3EO06 Microprocessor & Microcontroller

Programme: B.Tech. Branch/Specialisation: CSE All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. In the internal architecture of the Intel 8085 microprocessor, what component is responsible for arithmetic and logic operations? **1**

(a) ALU (Arithmetic Logic Unit) (b) Control unit

(c) Instruction register (d) Program counter

ii. Which addressing mode involves specifying the operand's address stored in a register or memory location? **1**

(a) Direct addressing mode (b) Indirect addressing mode

(c) Register addressing mode (d) Immediate addressing mode

iii. Which pin of the 8086 microprocessor is used to indicate the beginning of a machine cycle? **1**

(a) MN/MX (b) CLK (c) S0 (d) ALE

iv. In the minimum mode operation of the 8086 microprocessor, which pin is used to differentiate between the address and data bus? **1**

(a) ALE (b) MN/MX (c) DEN (d) QS0

v. Which of the following is NOT a typical function of a memory interface circuit? **1**

(a) Address decoding

(b) Data transfer control

(c) Instruction execution

(d) Timing and control signal generation

vi. The USART (Universal Synchronous/Asynchronous Receiver/Transmitter) 8251 is commonly used for: **1**

(a) Generating interrupts (b) Managing memory access

(c) Serial communication (d) Timer functions

vii. Which component of the 8051 microcontroller is commonly used for generating timing and counting events? **1**
(a) Accumulator (b) Data pointer
(c) Timer/counter (d) Program counter

viii. The addressing mode used in the 8051 microcontroller where the operand is directly specified in the instruction is called: **1**
(a) Direct addressing mode
(b) Indirect addressing mode
(c) Immediate addressing mode
(d) Register addressing mode

ix. Which component is utilized for interfacing a microcontroller with an ADC0808 (Analog-to-Digital Converter)? **1**
(a) Multiplexer (b) Digital potentiometer
(c) Analog comparator (d) Parallel interface

x. To control the movement of a stepper motor, a microcontroller commonly uses: **1**
(a) PWM (Pulse Width Modulation)
(b) UART (Universal Asynchronous Receiver-Transmitter)
(c) ADC (Analog-to-Digital Converter)
(d) GPIO (General Purpose Input/Output) pins

Q.2	i.	Define demultiplexing.	**2**
	ii.	Define machine cycle, instruction cycle & T state.	**3**
	iii.	Explain various addressing modes of 8085 microprocessor. Also give suitable example.	**5**
OR	iv.	Describe the pin configuration of 8085 microprocessor.	**5**
Q.3	i.	Explain instruction set of 8086.	**2**
	ii.	Draw and explain the functional block diagram of 8086 microprocessor.	**8**
OR	iii.	Write a program in 8086 assembly language to add two 8 bit numbers.	**8**
Q.4	i.	Define memory interfacing.	**3**
	ii.	Difference between 8253 and 8254. Draw architecture and explanation of 8254.	**7**
OR	iii.	How DMA operations are performed? Explain DMA controller interfacing.	**7**

Q.5	i.	Difference between microprocessor and microcontroller.	**4**
	ii.	Discuss the pin configuration of 8051 microcontroller.	**6**
OR	iii.	What is various type of interrupt in 8051? Explain with examples.	**6**
Q.6		Attempt any two:	
	i.	Explain interfacing of microcontroller with ADC.	**5**
	ii.	Explain interfacing of microcontroller with seven segment display.	**5**
	iii.	Explain interfacing of microcontroller with stepper motor.	**5**

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Marking Scheme

CS3EO06 (T) Microprocessor & Microcontroller

Q.1	i)	(A)	**1**
	ii)	(B)	**1**
	iii)	(C)	**1**
	iv)	(B)	**1**
	v)	(C)	**1**
	vi)	(C)	**1**
	vii)	(C)	**1**
	viii)	(C)	**1**
	ix)	(D)	**1**
	x)	(D)	**1**
Q.2	i.	Define Demultiplexing.	**2**
	ii.	Define Machine cycle, Instruction cycle & T State.	**1 marks for each**
	iii.	Explain various addressing modes of 8085 microprocessor	**3**
		With suitable example.	**2**
OR	iv.	Draw pin diagram of 8085	**2**
		Its function	**3**
Q.3	i.	Explain Instruction set of 8086.	**2**
	ii.	Architecture	**4**
		Explanation	**4**
OR	iii.	Write a program in 8086 assembly language to add two 8 bit numbers.	**8**
Q.4	i.	Define Memory Interfacing.	**3**
	ii.	Difference between 8253 and 8254.	**3**
		Draw architecture and Explanation of 8254.	**4**
OR	iii.	How DMA operations are performed?	**3**
		Explain DMA controller interfacing.	**4**
Q.5	i.	Difference between microprocessor and microcontroller.	**4**
	ii.	Discuss the Pin Configuration of 8051 microcontroller. As per the explanation	**6**
OR	iii.	What is various type of interrupt in 8051? Explain with examples.	**2** **4**
Q.6			
	i.	Interfacing of microcontroller with ADC. As per the explanation	**5**
	ii.	Interfacing of 8255 PPI As per the explanation	**5**
	iii.	Interfacing of microcontroller with stepper motor. As per the explanation	**5**

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