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

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2022

EC3CO10 Microprocessors & Microcontrollers

Programme: B.Tech. Branch/Specialisation: EC

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.

Q.1 i. What is true about microprocessor? **1**

(a) Microprocessor is a controlling unit of a micro-computer
(b) It is fabricated on a small chip capable of performing ALU (Arithmetic Logical Unit) operations
(c) It also communicate with the other devices connected to it.
(d) All of these

ii. What is false about microprocessor? **1**

(a) The microprocessor is of small size chip, hence is not portable.
(b) Microprocessor chips are available at low prices
(c) Microprocessors are versatile
(d) Failure rate of an IC in microprocessors is very low

iii. The instruction, MOV AX, [2500H] is an example of- **1**

(a) Immediate addressing mode
(b) Direct addressing mode
(c) Indirect addressing mode
(d) Register addressing mode

iv. The instructions that are used for reading an input port and writing an output port respectively are- **1**

(a) MOV, XCHG (b) MOV, IN
(c) IN, MOV (d) IN, OUT

v. Whenever a large memory is required in a microcomputer system, the memory subsystem is generally designed using- **1**

(a) Static RAM (b) Dynamic RAM
(c) Both (a) and (b) (d) ROM

P.T.O.

vi. In the I/O mode, the 8255 ports work as- **1**
(a) Reset pins (b) Set pins
(c) Programmable I/O ports (d) Only output ports

vii. In 8051, the logical instruction that affects the carry flag during its execution is- **1**
(a) XRL A (b) ANL A
(c) ORL A (d) RLC A

viii. In 8051, which of the following register can be addressed as a byte? **1**
(a) P1 (b) SCON (c) TMOD (d) TCON

ix. The CPU of 80286 contains- **1**
(a) 16-bit general purpose registers
(b) 16-bit segment registers
(c) Status and control register
(d) All of these

x. The iconic feature of the RISC machine among the following is- **1**
(a) Reduced number of addressing modes
(b) Increased memory size
(c) Having a branch delay slot
(d) All of these

Q.2 i. What is the machine cycle and instruction cycle of 8085 microprocessor? **2**

ii. What are the different types of flags available in 8085 microprocessor? Explain each block. **3**

iii. Draw the internal architecture block diagram of 8085 microprocessor and explain its various blocks. **5**

OR iv. Draw and explain the timing diagram of memory read operation of 8085 microprocessor. **5**

Q.3 i. What is memory segmentation in 8086 microprocessor? **2**

ii. Draw the register organization of 8086 and explain typical applications of each register. **8**

OR iii. Discuss the various addressing modes of 8086 with example. **8**

Q.4 i. Calculate the number of memory chips needed to design 8 kb memory if the memory chip size is 1024 X 1. **3**

ii. Draw the interfacing diagram of 8257 DMA controller with 8085 and explain its operation. **7**

OR iii. Explain the functional block diagram of 8255 programmable peripheral interface in detail. **7**

Q.5 i. Compare the difference between a microprocessor and microcontroller. **4**

ii. Give the addressing modes supported by 8051. Explain them in brief. **6**

OR iii. Explain interrupts of 8051 in detail. **6**

Q.6 Attempt any two:

i. Write the difference between RISC and CISC. **5**

ii. Explain the Von Neumann and Harvard architecture. **5**

iii. Write the difference between 80286 & 80386. **5**

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Marking Scheme

EC3CO10 Microprocessors & Microcontrollers

Q.1	i)	What is true about microprocessor? (d) All of these	**1**
	ii)	What is false about microprocessor? (a) The microprocessor is of small size chip, hence is not portable.	**1**
	iii)	The instruction, MOV AX, [2500H] is an example of (b) direct addressing mode	**1**
	iv)	The instructions that are used for reading an input port and writing an output port respectively are (d) IN, OUT	**1**
	v)	Whenever a large memory is required in a microcomputer system, the memory subsystem is generally designed using- (b) Dynamic RAM	**1**
	vi)	In the I/O mode, the 8255 ports work as (c) programmable I/O ports	**1**
	vii)	In 8051, the logical instruction that affects the carry flag during its execution is (d) RLC A	**1**
	viii)	In 8051, which of the following register can be addressed as a byte? (a) P1 (b) SCON (c) TMOD (d) TCON	**1**
	ix)	The CPU of 80286 contains (d) All of these	**1**
	x)	The iconic feature of the RISC machine among the following is (c) Having a branch delay slot	**1**
Q.2	i.	What is the machine cycle and Instruction cycle of 8085 microprocessor? Definition of machine cycle 1 mark Definition of Instruction cycle 1 mark	**2**
	ii.	What are the different types of flags available in 8085 microprocessor? Explain each block. Types of flags 1 mark Explanation 2 marks	**3**
	iii.	Draw the internal architecture block diagram of 8085 microprocessor and explain its various blocks. The internal architecture block diagram 3 marks Explanation of its various blocks 2 marks	**5**
OR	iv.	Draw and explain the timing diagram of memory read operation of 8085 microprocessor. Drawing of timing diagram of memory read operation 3 marks Explanation 2 marks	**5**
Q.3	i.	What is memory segmentation in 8086 microprocessor? Explanation of memory segment 2 marks	**2**
	ii.	Draw the register organization of 8086 and explain typical applications of each register. Register Organization diagram 3 marks Application of each register 5 marks	**8**
OR	iii.	Discuss the various addressing modes of 8086 with example. Types of addressing modes 2 marks Explanation with Example 6 marks	**8**
Q.4	i.	Calculate the number of memory chips needed to design 8 kb memory if the memory chip size is 1024 X 1. (8k x 8) / (1k x 1) = 64 [1024 x 1 = 1k]	**3**
	ii.	Draw the interfacing diagram of 8257 DMA controller with 8085 and explain its operation. Diagram of 8257 DMA controller 3 marks Explanation 4 marks	**7**
OR	iii.	Explain the functional block diagram of 8255 programmable peripheral interface in detail. diagram of 8255 programmable peripheral interface 3 marks Explanation 4 marks	**7**
Q.5	i.	Compare the difference between a Microprocessor and Microcontroller. 4 difference between a Microprocessor and Microcontroller 1 marks for each	**4**
	ii.	Give the addressing modes supported by 8051. Explain them in brief. Types of addressing modes 2 marks Explanation 4 marks	**6**
OR	iii.	Explain Interrupts of 8051 in detail. Types of Interrupts 2 marks Explanation 4 marks	**6**

Q.6

i.	Write the difference between RISC and CISC. 5 difference between RISC and CISC	1 marks for each	**5**
ii.	Explain the Von Neumann and Harvard Architecture Explanation of Von Neumann Explanation of Harvard Architecture	2.5 marks 2.5 marks	**5**
iii.	Write the difference between 80286 & 80386 5 difference between 80286 & 80386	1 marks for each	**5**

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