

# Faculty of Engineering

## End Semester Examination May 2025

### IT3CO32 Microprocessor & Microcontroller

<b>Programme</b>	<b>:</b>	B.Tech.	<b>Branch/Specialisation</b>	<b>:</b>	IT
<b>Duration</b>	<b>:</b>	3 hours	<b>Maximum Marks</b>	<b>:</b>	60

**Note:** All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

<b>Section 1 (Answer all question(s))</b>				<b>Marks</b>	<b>CO</b>	<b>BL</b>
<b>Q1.</b> In 8085 processor the HOLD and HLDA pin is used for _____.				1	1	1
<input type="radio"/> Memory Interfacing		<input type="radio"/> 8255 Interfacing				
<input checked="" type="radio"/> DMA Interfacing		<input type="radio"/> I/O Interfacing				
<b>Q2.</b> The first machine cycle of an instruction is always-				1	1	2
<input type="radio"/> Memory read cycle		<input checked="" type="radio"/> Opcode fetch cycle				
<input type="radio"/> I/O read cycle		<input type="radio"/> Memory write cycle				
<b>Q3.</b> The pin of minimum mode AD0- AD15 has _ data bus-				1	2	2
<input type="radio"/> 8 bit		<input type="radio"/> 20 bit				
<input checked="" type="radio"/> 16 bit		<input type="radio"/> 32 bit				
<b>Q4.</b> What is the maximum capacity of the memory that can be interfaced to the microprocessor which contains 20 address lines?				1	2	1
<input type="radio"/> 64 KB		<input checked="" type="radio"/> 1 MB				
<input type="radio"/> 64 MB		<input type="radio"/> 1 GB				
<b>Q5.</b> The signals that are provided to maintain proper data flow and synchronization between the data transmitter and receiver are-				1	3	1
<input checked="" type="radio"/> Handshaking signals		<input type="radio"/> Control signals				
<input type="radio"/> Input signals		<input type="radio"/> None of these				
<b>Q6.</b> In 8257 (DMA), each of the four channels has-				1	3	1
<input type="radio"/> A pair of two 8-bit registers		<input checked="" type="radio"/> A pair of two 16-bit registers				
<input type="radio"/> One 16-bit register		<input type="radio"/> One 8-bit register				
<b>Q7.</b> The architecture of 8051 consists of-				1	4	1
<input type="radio"/> 4 latches		<input type="radio"/> 2 timer registers				
<input type="radio"/> 4 on-chip I/O ports		<input checked="" type="radio"/> All of the mentioned				
<b>Q8.</b> Which of the following is an 8-bit register?				1	4	1
<input type="radio"/> PSW (Program Status Word)		<input type="radio"/> TCON (Timer Control Register)				
<input type="radio"/> Accumulator		<input checked="" type="radio"/> All of the mentioned				
<b>Q9.</b> The main importance of ARM micro-processors is providing operation with-				1	5	1
<input checked="" type="radio"/> Low cost and low power consumption		<input type="radio"/> Higher degree of multi-tasking				
<input type="radio"/> Lower error or glitches		<input type="radio"/> Efficient memory management				

**Q10.** The CISC stands for \_\_\_\_\_.

1 5 1

- Computer Instruction Set Compliment
- Complete Instruction Set Compliment
- Computer Indexed Set Components
- Complex Instruction Set Computer

### Section 2 (Answer all question(s))

Marks CO BL

**Q11.** Draw opcode fetch machine cycle for 8085 microprocessor.

2 1 3

Rubric	Marks
Draw Opcode fetch machine cycle for 8085 microprocessor	2

**Q12.** Write the differences between memory mapped I/O and I/O mapped I/O?

3 1 2

Rubric	Marks
Difference between memory mapped I/o and I/O mapped I/o? three difference minimum	3

**Q13. (a)** Classify the addressing modes with example of 8085 microprocessor.

5 1 3

Rubric	Marks
Classify the addressing modes	2.5
examples of modes	2.5

(OR)

**(b)** Write an assembly language program of 8086 to find the largest number in memory array.

Rubric	Marks
Write an assembly language program of 8085 to find the largest number in memory array.	5

### Section 3 (Answer all question(s))

Marks CO BL

**Q14.** Explain the physical address with suitable example in 8086 microprocessor.

2 2 3

Rubric	Marks
Explain the physical address	1
suitable example	1

**Q15.** What is pipelining? How it improves the processing speed?

3 2 2

Rubric	Marks
What is pipelining	1.5
How it improves the processing speed.	1.5

**Q16. (a)** Illustrate the branching instructions of 8086 microprocessor with example.

5 2 2

Rubric	Marks
Illustrate the branching instructions of 8086	2.5
branching instructions Example	2.5

**(OR)**

**(b)** Draw and explain the architecture of 8086 microprocessor with segmentation of memory.

Rubric	Marks
Draw and explain the architecture of 8086 microprocessor	3
segmentation of memory	2

#### **Section 4 (Answer all question(s))**

**Q17.** With suitable diagram explain the architecture of 8251.

**Marks CO BL**

4 3 2

Rubric	Marks
suitable diagram the architecture of 8251	2
explain architecture of 8251	2

**Q18. (a)** Explain the programmable interval timer (8254) with block diagram, read/write logic table and modes of timer.

6 3 3

Rubric	Marks
<b>Explain the programmable interval timer (8254) with block diagram</b>	3
<b>read/write logic table and modes of timer</b>	3

**(OR)**

**(b)** Explain the various modes of operation in 8255 with control word register of 8255.

Rubric	Marks
Explain the various modes of operation in 8255	4
control word register of 8255	2

#### **Section 5 (Answer all question(s))**

**Q19.** Write differences between microcontroller and microprocessor.

**Marks CO BL**

3 4 1

Rubric	Marks
<b>write differences between microcontroller and microprocessor. minimum three difference</b>	3

**Q20. (a)** Write a brief note on interrupts of 8051 microcontroller.

7 4 2

Rubric	Marks
Write a brief note on interrupts of 8051 microcontroller.	7

**(OR)**

**(b)** Draw the architecture of 8051 microcontroller and explain the blocks in it.

Rubric	Marks
architecture of 8051 microcontroller	3
explain the blocks in it.	4

### **Section 6 (Answer any 2 question(s))**

**Marks CO BL**

**Q21.** Explain the features of 80286 microprocessors.

5 5 2

Rubric	Marks
Explain the features of 80286 microprocessors. minimum 5 feature	5

**Q22.** Explain the Von Neumann and Harvard Architecture with block diagram.

5 5 1

Rubric	Marks
explain the Von Neumann and Harvard Architecture	2.5
block diagram.	2.5

**Q23.** Differentiate between the concept of RISC and CISC.

5 5 3

Rubric	Marks
Differentiate the concept of RISC and CISC. minimum 5 difference	5

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