**Printed Page:-03** **Subject Code**:- **AMICSE0405**

**Roll. No:**

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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA**

**(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**M.Tech (Integrated)**

**SEM: IV - THEORY EXAMINATION (2024 - 2025)**

**Subject: Microprocessor**

**Time: 3 Hours** **Max. Marks: 100**

**General Instructions:**

**IMP:** *Verify that you have received the question paper with the correct course, code, branch etc.*

***1.*** *This Question paper comprises of* ***three Sections -A, B, & C.*** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

***2.*** *Maximum marks for each question are indicated on right -hand side of each question.*

***3.*** *Illustrate your answers with neat sketches wherever necessary.*

***4.*** *Assume suitable data if necessary.*

***5.*** *Preferably, write the answers in sequential order.*

***6.*** *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*



**SECTION-A** 20

1. Attempt all parts:-

1-a. Determine the vector address of TRAP. (CO1,K3) 1

(a) 0024H

(b) 0034H

(c) 002CH

(d) 003CH

1-b. How many flip-flops are there in a flag register of 8085 microprocessor? (CO1,K1) 1

(a) 4

(b) 5

(c) 7

(d) 10

1-c. The instruction which is used to rotate Accumulator right with carry is _____. (CO2,K1) 1

(a) RCL

(b) RCR

(c) ROR

(d) RAR

1-d. The instruction that pushes the general purpose registers on to the stack is _____. (CO2,K2) 1

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(a) POP B
(b) SPHL
(c) PUSH B
(d) PCHL

1-e. The Stack follows the _____ sequence. (CO3,K2) 1

(a) first-in-first-out
(b) first-in-last-out
(c) last-in-first-out
(d) last-in-last-out

1-f. A group of 4 bits is called a _____. (CO3,K1) 1

(a) byte
(b) memory
(c) code
(d) nibble

1-g. The device that enables the microprocessor to read data from the external devices is _____. (CO4,K3) 1

(a) printer
(b) joystick
(c) display
(d) reader

1-h. Calculate the address lines required for an 2K Byte memory chip. (CO4,K3) 1

(a) 13
(b) 12
(c) 11
(d) 10

1-i. The number of counters that are present in the programmable timer device 8254 is _____. (CO5,K1) 1

(a) 1
(b) 2
(c) 3
(d) 4

1-j. What is the memory size of 8086 microprocessor? (CO5,K1) 1

(a) 1 GB
(b) 1 MB
(c) 1 KB
(d) 1 TB

2. Attempt all parts:-

2.a. What is assembly language? (CO1,K1) 2

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| | | |
|---|---|---|
| 2.b. | Describe CMA instruction. (CO2,K2) | 2 |
| 2.c. | Find out the 2's complement of 11001011? (CO3,K3) | 2 |
| 2.d. | Explain the interrupt which has highest priority. (CO4,K2) | 2 |
| 2.e. | What is asynchronous data transfer? (CO5,K2) | 2 |

**SECTION-B** 30

3. Answer any five of the following:-

| | | |
|---|---|---|
| 3-a. | Differentiate between RISC & CISC microprocessors. (CO1,K3) | 6 |
| 3-b. | Write short note on evolution of microprocessors. (CO1,K1) | 6 |
| 3-c. | Explain the interrupts used in 8085. List out all the vectored interrupts of 8085 and give their vector address.(CO2,K2) | 6 |
| 3-d. | Differentiate between INX B and INR B with help of example. (CO2,K3) | 6 |
| 3.e. | What is a Subroutine in assembly language? (CO3,K1) | 6 |
| 3.f. | Explain the instruction : SIM. (CO4,K2) | 6 |
| 3.g. | What is an USART? Draw its block diagram. (CO5,K2) | 6 |

**SECTION-C** 50

4. Answer any one of the following:-

| | | |
|---|---|---|
| 4-a. | Draw and explain the timing diagram of opcode fetch cycle. (CO1,K3) | 10 |
| 4-b. | Explain the block diagram of 8085 microprocessor describe each block in detail. (CO1,K2) | 10 |

5. Answer any one of the following:-

| | | |
|---|---|---|
| 5-a. | Explain data transfer instructions of 8085 microprocessor with help of examples. (CO2,K2) | 10 |
| 5-b. | Write an assembly language program to convert BCD to 7segment display. (CO2,K3) | 10 |

6. Answer any one of the following:-

| | | |
|---|---|---|
| 6-a. | Illustrate time delay using a loop within a loop technique. (CO3,K3) | 10 |
| 6-b. | Design a counter using Time Delay. (CO3,K3) | 10 |

7. Answer any one of the following:-

| | | |
|---|---|---|
| 7-a. | With proper timing diagram explain IN instruction. (CO4,K2) | 10 |
| 7-b. | With proper diagram compare Memory-Mapped I/O and Peripheral I/O in detail. (CO4,K4) | 10 |

8. Answer any one of the following:-

| | | |
|---|---|---|
| 8-a. | Draw the architecture of DMA controller 8237 and explain it. (CO5,K2) | 10 |
| 8-b. | Explain the internal architecture of 8086 microprocessor. (CO5,K2) | 10 |