Printed Page:- 03 **Subject Code:- AEC0404**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - THEORY EXAMINATION (2023 - 2024)

Subject: Microprocessor and Microcontroller

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. The smallest unit of data in computer is _____.(CO1) 1

(a) Byte
(b) Bit
(c) Nibble
(d) word

1-b. The third state of a Three-state Buffer is _____. (CO1) 1

(a) 0
(b) 1
(c) High Impedance
(d) Short Circuit

1-c. Microprocessor consists of _____. (CO2) 1

(a) ALU
(b) Register Array
(c) Control Unit
(d) All of the above

1-d. Which of the following is not a special function register? (CO2) 1

(a) Program counter
(b) Instruction Register
(c) Accumulator

(d) Stack pointer

1-e. 8051 microcontroller has _____ 16-bit counter/timers.(CO3) 1

(a) 2
(b) 3
(c) 4
(d) None of these

1-f. Which of the following statements will add the accumulator and register 3? (CO3) 1

(a) ADD @R3, @A
(b) ADD A, R3
(c) ADD @A, R3
(d) none of these

1-g. When the processor is executing in ARM state, then all instructions are _____ bit wide. (CO4) 1

(a) 8
(b) 16
(c) 32
(d) 64

1-h. What is the full form of LSL? (CO4) 1

(a) Logical Shift Left
(b) Left Shift Logical
(c) Logical Shift Logic
(d) None of these

1-i. There are ____ general purpose registers in ARM Cortex M0 processor. (CO5) 1

(a) 13
(b) 14
(c) 15
(d) 12

1-j. The ARM and thumb instruction set and java byte codes are _____ instruction set. (CO5) 1

(a) Java
(b) Jazelle
(c) ARM
(d) None of the above

2. Attempt all parts:-

2.a. Define system bus. (CO1) 2

2.b. Write the features of 8085 microprocessor. (CO2) 2

2.c. Name the interrupts available in microcontroller 8051. (CO3) 2

2.d.	Illustrate the term ARM. (CO4)	2
2.e.	Write short note on thumb instruction set. (CO5)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Explain in detail following parts of microprocessor: (CO1) (i) ALU (ii) Registers (iii) Control Unit.	6
3-b.	Differentiate between primary and secondary memory. (CO1)	6
3-c.	List all the interrupt signals of 8085 microprocessor. (CO2)	6
3-d.	Explain the following instructions of 8085 microprocessor with an example. a) Data transfer instructions b) Logical instructions. (CO2)	6
3.e.	Write a program to perform 8-bit addition and 8- bit subtraction in 8051. (CO3)	6
3.f.	Elaborate the device memory space of ARM Cortex M0 microprocessor with applications. (CO4)	6
3.g.	Discuss about the term endianness? Discuss its types. Which endianness is followed by ARM Cortex M0 processor? (CO5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Explain different generations of Microprocessors in detail.(CO1)	10
4-b.	What is System Bus? Draw its architecture and Explain the different types of Buses with their functions. (CO1)	10

5. Answer any one of the following:-

5-a.	Why the lower order address bus is multiplexed with data bus? How they will be de-multiplexed? With the help of figure explain demultiplexing of address/data bus. (CO2)	10
5-b.	Define addressing modes. With suitable examples explain 8085 addressing modes in detail. (CO2)	10

6. Answer any one of the following:-

6-a.	Explain the architecture of 8051 microcontroller with a neat block diagram. (CO3)	10
6-b.	Write a program to generate a square wave of 50 Hz frequency on pin P2.3 in 8051. (CO3)	10

7. Answer any one of the following:-

7-a.	Explain the ARM processor families along with their features.(CO4)	10
7-b.	What do you mean by RAM and ROM? How does ARM Cortex M0 microprocessor interact with them? (CO4)	10

8. Answer any one of the following:-

8-a.	Discuss the instruction set available in ARM processor with example. (CO5)	10
8-b.	Mention the instructions used for sleep mode feature-related with suitable examples. (CO5)	10