Printed Page:- 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 (2021 - 2022)

Subject: Microprocessor and Microcontroller

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 mark each & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. 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. When power is switched off which memory loses its data? (CO1) 1

(a) Non-Volatile Memory
(b) Volatile Memory
(c) Both A and B
(d) None of the above

1-b. A processor has 28 bit address lines. How much memory it can handle? (CO1) 1

(a) 128MB
(b) 256MB
(c) 128GB
(d) 256GB

1-c. What is SIM? (CO2) 1

(a) Select interrupt mask
(b) Sorting interrupt mask
(c) Set interrupt mask
(d) None of these

1-d. Examples of 2-byte instruction _____. (CO2) 1

(a) MOV A,B
(b) ADD C
(c) XRA B
(d) ADI 34H

1-e. The internal RAM memory of the 8051 microcontroller is_____. (CO3) 1

(a) 32 bytes
(b) 64 bytes
(c) 128 bytes
(d) 256 bytes

1-f. MOV A, @ R1 will _____. (CO3) 1

(a) copy R1 to the accumulator
(b) copy the contents of memory whose address is in R1 to the accumulator
(c) copy the accumulator to the contents of memory whose address is in R1
(d) copy the accumulator to R1

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

wide. (CO4)

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

1-h. The ARM instruction set architecture divided into _____ classes of instructions. (CO4) 1

(a) 2
(b) 4
(c) 6
(d) 8

1-i. Which one of the following is the load and store instructions? (CO5) 1

(a) Data processing, register transfer, and data transfer instructions
(b) Load or store single register, load and store multiple register
(c) Multiply instructions, status register transfer instructions
(d) None of the above

1-j. MRS and MSR are _____ instructions. (CO5) 1

(a) shift and rotate
(b) memory barrier
(c) special register access
(d) None of these

2. Attempt all parts:-

2.a. What is flash memory? Where such memories are used? (CO1) 2

2.b. Why address bus unidirectional? (CO2) 2

2.c. Why does Port 0 needs pull-up resistors? (CO3) 2

2.d. Discuss the concepts of loading and storing. (CO4) 2

2.e. Define APSR. (CO5) 2

SECTION B 30

3. Answer any five of the following:-

3-a. What do you mean by interfacing? Discuss the various logic devices used in interfacing circuits. (CO1) 6

3-b. Explain the purpose to construct such memory hierarchy in digital computers. (CO1) 6

3-c. Write a Program to Perform the following functions and verify the output steps: (CO2) 6
a. Load the number 5CH in register D
b. Load the number 9E H in register C
c. Increment the Contents of register C by one.

3-d. List all the interrupt signals of 8085 microprocessor. (CO2) 6

3.e. Write an 8051 program for displaying the sum of two numbers, if sum of numbers is smaller than FFH otherwise display 01H. (CO3) 6

3.f. Discuss about the GPIO unit of ARM Cortex M0 microprocessor. (CO4) 6

3.g. What are pipeline hazards? How it can be removed in ARM Cortex M0 processor? (CO5) 6

SECTION C 50

4. Answer any one of the following:-

4-a. What is Memory hierarchy? Explain the purpose to construct such memory hierarchy in digital computers. (CO1) 10

4-b. What are the functions of ALU, registers, memory and control Unit. (CO1) 10

5. Answer any one of the following:-

5-a.	Define addressing modes. With suitable examples explain 8085 addressing modes in detail. (CO2)	10
5-b.	Draw the machine cycle of different instruction of 8085. (CO2) MOV A, B MVI A, 40H LXI H, 4030H	10

6. Answer any one of the following:-

6-a.	Explain in detail pin diagram of 8051 microcontroller. (CO3)	10
6-b.	Write an 8051 assembly language program to sort block of ten data stored in external memory location from 4000H in ascending order. (CO3)	10

7. Answer any one of the following:-

7-a.	Elaborate endianness in detail. What do you mean by big and little endianness? (CO4)	10
7-b.	Describe all the registers of ARM Cortex M0 processor in detail. (CO4)	10

8. Answer any one of the following:-

8-a.	Mention the instructions used for sleep mode feature-related with suitable examples. (CO5)	10
8-b.	Explain arithmetic and rotate instructions available in ARM Cortex-M0 instruction set. (CO5)	10