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 - CARRY OVER THEORY EXAMINATION - APRIL 2023

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 hexadecimal number system contains how many digits? (CO1) 1

(a) 2

(b) 4

(c) 8

(d) 16

1-b. The circuit used to store one bit of data is known as ___.(CO1) 1

(a) Register

(b) Flip Flop

(c) Counter

(d) None

1-c. The length of A register is ——- bits.(CO2) 1

(a) 4

(b) 8

(c) 16

(d) 32

1-d. _____flag is set to 1 when the result of arithmetic or logical operation is negative else it is set to 0?(CO2) 1

(a) Sign

(b) Parity

(c) Zero

(d) Overflow

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

(a) 2

(b) 3

(c) 4

(d) None of these

1-f. Both registers TL0 and TL1 is of how many bit? (CO3) 1

(a) 2

(b) 4

(c) 8

(d) 16

1-g. What is the full form of CPI? (CO4) 1

(a) Cycles Per Instructions

(b) Complex Cycles Per Instructions

(c) Current Per Instructions

(d) None of these

1-h. Register R13 is used as_____. (CO4) 1

(a) Link Register

(b) Program Counter

(c) Stack Pointer

(d) Status Register

1-i. What is the full form of ASR? (CO5) 1

(a) Automatic Shift Right

(b) ARM Shift Right

(c) Arithmetic Shift Right

(d) None of these

1-j. Which one of the following is the arithmetic operation instructions? (CO5) 1

(a) BIC

(b) TST

(c) MVN

(d) MUL

2. Attempt all parts:-

2.a.	What is computer architecture? (CO1)	2
2.b.	What is Program counter? (CO2)	2
2.c.	Name the five interrupt sources of 8051? (CO3)	2
2.d.	Which kind of memory is supported by ARM cotex M0 processor? (CO4)	2
2.e.	Discuss any two extend ordering instructions of Cortex-M0 processor. (CO5)	2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-a.	What is secondary memory? Explain Floppy Disk.(CO1)	6
3-b.	Write short note on: a. First Generation Microprocessor b. Second Generation Microprocessor c. Third Generation Microprocessor (CO1)	6
3-c.	Explain 8085 Stack in detail. (CO2)	6
3-d.	What is bus? Explain different types of buses. (CO2)	6
3.e.	Explain briefly about IE and IP special function registers. (CO3)	6
3.f.	What do you mean by coprocessor environment? Is ARM Cortex M0 microprocessor applicable for the same? If Yes how it's possible? (CO4)	6
3.g.	Illustrate the power saving techniques of ARM Cortex M0 processor. Discuss the significance of each of them? (CO5)	6

SECTION C **50**

4. Answer any <u>one</u> of the following:-

4-a.	Convert following numbers to hexadecimal. (CO1) i. (360)base8 ii. (2262)base10 iii. (10011.1101)base2 iv (10.1)base2	10
4-b.	Explain the difference between each of the following: (CO1) i. SRAM and DRAM ii. RISC and CISC	10

5. Answer any <u>one</u> of the following:-

5-a. Explain the purpose of the following signals in 8085. (CO2) 10

(i) READY

(ii) AD0-AD7

(iii)HOLD

(iv) IO/ M

(v) INTR

5-b. Draw and explain the timing diagram of I/O write cycle and I/O read cycle. (CO2) 10

6. Answer any <u>one</u> of the following:-

6-a. Discuss about the organization of internal RAM and special function registers of 8051 microcontroller in detail. (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 <u>one</u> of the following:-

7-a. How three stage pipeline can be implemented and work efficiently in Cortex M0 processor? (CO4) 10

7-b. What do you mean by the term peripheral devices? How ARM Cortex M0 microprocessor interacts with them? (CO4) 10

8. Answer any <u>one</u> of the following:-

8-a. Explain the following instructions with examples: (CO5) 10

(i) POP (ii) PUSH (iii) ADC (iv) SBC

8-b. Explain the following instructions with examples: (CO5) 10

(i) SVC (ii) NOP (iii) ADC (iv) REV