Printed Page:- 04 **Subject Code**:- **ACSAI0302**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - CARRY OVER THEORY EXAMINATION - AUGUST 2023

Subject: Logic Design and Computer Architecture

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.*

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SECTION A **20**

1. Attempt all parts:-

1-a. The basic unit of a Number System is_____. CO1 1

(a) GHz

(b) MHz

(c) Byte

(d) Bit

1-b. The transfer of information from a memory word to the outside environment is called _____ operation. CO1 1

(a) Write

(b) Control

(c) Read

(d) Acknowledge

1-c. The _____ is used to coordinate the operation of the multiplier. CO2 1

(a) Sequence Counter

(b) Controller

(c) Coordinator

(d) None of the mentioned

1-d. In which of the following adder circuits, the carry look ripple delay is eliminated? CO2 1

(a) Half adder

(b) Full adder

(c) Carry look-ahead adders

(d) Parallel Adder

1-e. _____ instruction swaps information between two registers or a register and a memory word. CO3 1

(a) Exchange

(b) Move

(c) Store

(d) Load

1-f. What is the value of R1 EXOR R2 when R1 = 1010 and R2 = 1100? CO3 1

(a) 1000

(b) 0110

(c) 1110

(d) 0100

1-g. Property of locality of reference may fail, if a program has _____. CO4 1

(a) many conditional jumps

(b) many unconditional jumps

(c) many operand

(d) many operators

1-h. Primary memory is _____ compared to secondary memory. CO4 1

(a) Slow and expensive

(b) Slow and inexpensive

(c) Fast and expensive

(d) Fast and inexpensive

1-i. The main job of the interrupt system is to identify the _____ of the interrupt. CO5 1

(a) Source

(b) Signal

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(c) Device

(d) Peripherals

1-j. After the completion of the DMA transfer, the processor is notified by _____. CO5 1

(a) Acknowledge signal

(b) Interrupt signal

(c) WMFC signal

(d) None of the mentioned

2. Attempt all parts:-

2.a. Define Bus. CO1 2

2.b. Define ALU. CO2 2

2.c. Define instruction types. CO3 2

2.d. Briefly explain Primary and Secondary storage. CO4 2

2.e. Explain Interrupts. CO5 2

SECTION B **30**

3. Answer any five of the following:-

3-a. Explain the following arbitration schemes: Daisy Chaining and Polling with help of diagram. CO1 6

3-b. Explain General Register Oragnization with the help of diagram. CO1 6

3-c. Find the ashr R1 , ashr R2 when R1=001101 and R2=110001. CO2 6

3-d. Describe IEEE Standard for Floating Point Numbers. CO2 6

3.e. Explain Pipelining with the help of proper diagram. CO3 6

3.f. Describe in detail about Auxiliary memory. CO4 6

3.g. Explain Peripheral Devices. CO5 6

SECTION C **50**

4. Answer any one of the following:-

4-a. Explain different types of addressing modes with proper example. CO1 10

4-b. With proper diagram explain Full Adder and write its two applications. CO1 10

5. Answer any one of the following:-

5-a. Show the hardware diagram of Booth's algorithm and signed magnitude algorithm and explain it. CO2 10

5-b. Perform the division process of 00001111 by 0011 with help of restoring division algorithm. CO2 10

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

6-a.	With the help of proper diagram explain the complete execution of an instruction cycle. CO3	10
6-b.	Explain RISC and CISC. Differentiate between Hardwire and Microprogrammed Control Unit. CO3	10

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

7-a.	With proper diagram explain Memory Hierarchy and Differentiate between ROM and RAM. CO4	10
7-b.	Explain the concept of FIFO replacement algorithm. What are its various advantages and disadvantages. CO4	10

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

8-a.	Explain in detail about the standard I/O interface. CO5	10
8-b.	Explain DMA. What is difference between serial and parallel communication? CO5	10

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