Printed Page:- **Subject Code**:- AMICSE0305

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

SEM: III - CARRY OVER THEORY EXAMINATION - APRIL 2023

Subject: Computer Organization & 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.*

SECTION A **20**

1. Attempt all parts:-

1-a. Stack works on _____ technique. (CO1) 1

(a) FIFO

(b) FILO

(c) LIFO

(d) None

1-b. A stack organized computer uses instruction of_____. (CO1) 1

(a) Immediate Addressing

(b) Indirect Addressing

(c) Zero addressing

(d) Two- addressing

1-c. The sign magnitude representation of -1 is _____. (CO2) 1

(a) 1010

(b) 1110

(c) 1000

(d) 1001

1-d. One extra bit is added on the left of a binary number, in case of Binary Multiplication using_____. (CO2) 1

(a) Booth's Algorithm

(b) Signed -magnitude Algorithm

(c) Unsigned- magnitude Algorithm

(d) None of the above

1-e. Number of basic operations of versatility_____. (CO3) 1

(a) 4

(b) 3

(c) 2

(d) 1

1-f. _____ are the different type/s of generating control signals. (CO3) 1

(a) Micro-programmed

(b) Hardwired

(c) Micro-instructions

(d) Both Micro-programmed and hardwired

1-g. The BOOT sector files of the system are stored in _____. (CO4) 1

(a) hard disk

(b) ROM

(c) RAM

(d) Fast solid state chips in the motherboard

1-h. Fastest data access is provided using _____. (CO4) 1

(a) Caches

(b) DRAM's

(c) SRAM's

(d) Registers

1-i. The method which offers higher speeds of I/O transfers is _____. (CO5) 1

(a) DMA

(b) Interrupts

(c) Memory mapping

(d) None

1-j. An interrupt that can be temporarily ignored is_____. (CO5) 1

(a) Vectored interrupt

(b) Maskable interrupt

(c) Non-maskable interrupt

(d) Higher priority interrupt

2. Attempt all parts:-

2.a.	What is a register? (CO1)	2
2.b.	Explain the signed magnitude multiplication algorithm. (CO2)	2
2.c.	Give the instruction format. (CO3)	2
2.d.	Define role of match register in associative memory. (CO4)	2
2.e.	What is I/O interface and ports? (CO5)	2

SECTION B **30**

3. Answer any five of the following:-

3-a.	Explain Centralized Bus Arbitration approach with its advantages and disadvantages. (CO1)	6
3-b.	Explain the following addressing modes with examples i. Register Indirect addressing ii) Immediate Addressing iii. Register direct Addressing. (CO1)	6
3-c.	Represent single precision of IEEE 754 for -2.35 . (CO2)	6
3-d.	Why CLA is differ from Full adder using suitable diagram ? (CO2)	6
3.e.	Differentiate between pipelined and non-pipelined processing. (CO3)	6
3.f.	Explain memory hierarchy with suitable diagram. What are the different levels in memory hierarchy? (CO4)	6
3.g.	Explain how DMA transfer is accomplished with the help of diagram. (CO5)	6

SECTION C **50**

4. Answer any one of the following:-

4-a.	Convert the arithmetic expressions from infix to polish notation. i. A* (B+C*CD+E)/F*(G+H) ii) A* (B+C*CD+E)/F. (CO1)	10
4-b.	Explain the General Register Organization using seven registers with suitable block diagram and opcode table. (CO1)	10

5. Answer any one of the following:-

5-a.	Show the Block diagram of array multiplier for b1 b0 X a1 a0 and b3 b2 b1 b0 & multiplier a2 a1 a0. (CO2)	10
5-b.	Calculate -9 X -13 with the help of Booth algorithm using flow chart. (CO2)	10

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

6-a.	What is meant by mapping process? Explain using a suitable example. (CO3)	10
6-b.	Explain the execution of instruction with diagram with respect to instruction cycle. (CO3)	10

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

7-a.	Explain the functionality of RAM chip using block diagram and function table. (CO4)	10
7-b.	What is Auxiliary memory? Explain different types of Auxiliary memories in detail. (CO4)	10

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

8-a.	Define handshaking. Explain source-initiated and destination-initiated transfer using handshaking with help of block diagram and timing diagram. (CO5)	10
8-b.	What is interrupt? Explain different types of interrupts and their exceptions. (CO5)	10