Printed Page:-03

Subject Code:- ACSBS0303

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: III - THEORY EXAMINATION (2023 - 2024)

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. Brain of computer is _____. (CO1) 1

(a) Control unit

(b) Arithmetic and Logic unit

(c) Central Processing Unit

(d) Memory

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

(a) Byte

(b) Nibble

(c) Bit

(d) KB

1-c. IEEE stands for _____. (CO2) 1

(a) Instantaneous Election Electrical Engineering

(b) Institute of Emerging Electrical Engineers

(c) Institute of Emerging Electronic Engineers

(d) Institute of Electrical and electronics engineers

1-d. The most efficient method followed by computers to multiply two unsigned numbers is _____. (CO2) 1

(a) Booth algorithm

(b) Bit pair recording of multipliers

(c) Restoring algorithm

(d) Non restoring algorithm

1-e. The BOOT sector files of the system are stored in _____. (CO3) 1

(a) harddisk

(b) ROM

(c) RAM

(d) Fast solid state chips in the motherboard

1-f. _____ is the formula for Hit Ratio. (CO3) 1

(a) Hit/(Hit + Miss)

(b) Miss/(Hit + Miss)

(c) (Hit + Miss)/Miss

(d) (Hit + Miss)/Hit

1-g. The full form of UART is _____. (CO4) 1

(a) universal asynchronous receiver transmitter

(b) unique asynchronous receiver transmitter

(c) universal address receiver transmitter

(d) Its architectural design

1-h. A _____ command is issued to activate the peripheral and to inform it what to do. (CO4) 1

(a) Control

(b) Status

(c) Data output

(d) Data Input

1-i. The pipelining process is also called as _____.(CO5) 1

(a) Superscalar operation

(b) Assembly line operation

(c) Von Neumann cycle

(d) None of the mentioned

1-j. What is the Optimal page – replacement algorithm? (CO5) 1

(a) Replace the page that has not been used for a long time

(b) Replace the page that has been used for a long time

(c) Replace the page that will not be used for a long time

(d) None of the mentioned

2. Attempt all parts:-

2.a. What do you understand by the term Computer Architecture? (CO1) 2

2.b. Explain three main features of ALU. (CO2) 2

2.c. What are volatile and non-volatile memories? (CO3) 2

2.d. What is DMA? (CO4) 2

2.e.	What is parallel processing? (CO5)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Draw the basic functional units of a computer. (CO1)	6
3-b.	Explain stack memory organization with example. (CO1)	6
3-c.	Explain the IEEE 754 floating point representation for floating point numbers with examples. (CO2)	6
3-d.	Draw and explain Carry Look Ahead adder with diagram. (CO2)	6
3.e.	What is SRAM and DRAM? (CO3)	6
3.f.	Explain difference between vectored and non- vectored interrupts. (CO4)	6
3.g.	Design and explain the concept of Pipelining with the help of suitable example.(CO5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	What is System Bus? Draw its architecture and explain the different types of Buses with their functions. (CO1)	10
4-b.	What are logic gates? Explain the different types of logic gates with truth table. (CO1)	10

5. Answer any one of the following:-

5-a.	Explain booth's algorithm with the help of flow chart. (CO2)	10
5-b.	Sketch the flow diagram of division algorithm with suitable example. (CO2)	10

6. Answer any one of the following:-

6-a.	Differentiate between hardwired and micro-programmed control unit. (CO3)	10
6-b.	Explain memory hierarchy in details with the help of diagram. (CO3)	10

7. Answer any one of the following:-

7-a.	What is I/O peripheral devices? Draw and explain Interrupt Initiated I/O process. (CO4)	10
7-b.	Draw the block diagram of DMA controller. (CO4)	10

8. Answer any one of the following:-

8-a.	What is Parallel processing? Also differentiate between pipelining and parallel processing. (CO5)	10
8-b.	Explain various pipelining conflicts. Write short notes on Throughput and speedup. (CO5)	10