**Printed Page:-** 04 **Subject Code**:- **ACSBS0303**

**Roll. No:**

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**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: 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. MS Word is a/an _____. (CO1) 1

(a) Hardware

(b) Application Software

(c) Virus

(d) None of the above.

1-b. In Register Indirect Addressing mode. (CO1) 1

(a) Registers which are in CPU

(b) Registers specifies the address of operand

(c) specified in the register

(d) Specifed implicity in the definition of instruction

1-c. The 1's complement of 1 in 4 bits is ____. (CO2) 1

(a) 1110

(b) 0001

(c) 1111

(d) 0101

1-d. For the addition of large integers, most of the systems make use of (CO2) 1

(a) Fast adders

(b) Full adders

(c) Carry look-ahead adders

(d) None of the mentioned

1-e. Which of the following techniques used to effectively utilise main memory? (CO3) 1

(a) Address binding

(b) dynamic linking

(c) dynamic loading

(d) None

1-f. Which of the following is true? (CO3) 1

(a) To overcome the slow operating speeds of the secondary memory we make use of faster flash drives.

(b) If we use the flash drives instead of the hard disks, then the secondary storage can go above primary memory in the hierarchy.

(c) In the memory hierarchy, as the speed of operation increases the memory size also increases

(d) None

1-g. A _____ command is used to test various status conditions in the interface and the peripheral. (CO4) 1

(a) Control

(b) Status

(c) Data output

(d) Data Input

1-h. When the R/W bit of the status register of the DMA controller is set to 1. (CO4) 1

(a) read operation is performed

(b) write operation is performed

(c) read & write operation is performed

(d) none of the mentioned

1-i. The fetch and execution cycles are interleaved with the help of _____. (CO5) 1

(a) Modification in processor architecture

(b) Clock

(c) Special unit

(d) Control unit

1-j. A FIFO replacement algorithm associates with each page the _____. (CO5) 1

(a) time it was brought into memory

(b) size of the page in memory

(c) page after and before it

(d) all of the mentioned

**2. Attempt all parts:-**

2.a. Define positive logic and negative logic. (CO1) 2

2.b. Why Booth algorithm is important for multiplication? (CO2) 2

2.c. Define set associative cache mapping. (CO3) 2

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

2.e. What are the major hurdle of pipelining hazards? (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. What is the significance of BCD code? (CO1) 6

3-c. Sketch the flow diagram of booth multiplication algorithm and Explain it. (CO2) 6

3-d. What is Carry Look Ahead Adder? Explain with logic diagram. (CO2) 6

3.e. What are PROM ? Explain in detail. (CO3) 6

3.f. Explain the term cycle stealing and burst transfer. (CO4) 6

3.g. Explain the various stages of pipelining with the help of diagram. (CO5) 6

**SECTION C** **50**

**4. Answer any one of the following:-**

4-a. Draw a diagram of bus system for four registers with the use of multiplexer. Also explain the selection table for Bus. (CO1) 10

4-b. What do you understand by three state buffers? Explain the memory transfer with the help of memory read and memory write operation. (CO1) 10

**5. Answer any one of the following:-**

5-a. Explain IEEE floating point representation with the help of suitable example. Describe various types of representations also. (CO2) 10

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|---|---|---|
| 5-b. | What is the difference between shl and ashl? Find the shl R1, ashl R1 , shl R2 and ashl R2 when R1=011101 & R2=110001. (CO2) | 10 |

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

| | | |
|---|---|---|
| 6-a. | What is instruction format? Explain various types of instruction format with the help of examples. (CO3) | 10 |
| 6-b. | What is parallel processing in computer system? Explain Flynn's classification also. (CO3) | 10 |

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

| | | |
|---|---|---|
| 7-a. | What is Memory hierarchy in computer architecture? Explain with diagram. (CO4) | 10 |
| 7-b. | What is DMA controller? Explain the purpose of DMA controller with diagram. (CO4) | 10 |

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

| | | |
|---|---|---|
| 8-a. | What is the purpose of pipeline in computer architecture? Explain with the help of diagram. (CO5) | 10 |
| 8-b. | What is the difference between parallel processing and pipelining in computer architecture? Describe various types of pipelining hazards. (CO5) | 10 |