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| **SESSION** | **NOV-DEC2023** |
| **PROGRAM** | **BCA** |
| **SEMESTER** | **III** |
| **COURSE CODE & NAME** | **DCA2103 - COMPUTER ORGANIZATION** |
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**Set-I**

**1. Discuss Booth's multiplication algorithm, trace the steps for multiplying (-5)\*(+4).**

**Ans 1.**

**Introduction to Booth's Algorithm**

Booth's Multiplication Algorithm, named after Andrew Donald Booth, is a significant algorithm in the field of computer arithmetic. It's particularly efficient for multiplying binary numbers, especially when dealing with two's complement numbers. The algorithm stands out due to its ability to handle negative numbers efficiently and reduce the number of arithmetic operations required.

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**2. Write a note on the following addressing modes:**

**i) Direct Addressing**

**ii) Indirect Addressing**

**iii) Register Addressing**

**iv) Register Indirect Addressing**

**Ans 2.**

Direct, Indirect, Register, and Register Indirect Addressing are fundamental concepts in computer architecture and programming, integral to how a CPU accesses data stored in memory or registers. Understanding these addressing modes is crucial for both hardware designers and software developers, especially those working with low-level programming or system design.

**Direct Addressing**

**3. What is memory interleaving? Explain briefly the design of memory subsystem using Dynamic Memory Chips.**

**Ans 3.**

Memory interleaving is a technique used in computer systems to improve the efficiency of memory access. It involves distributing memory addresses across multiple memory modules or banks, allowing the CPU to access data from multiple modules simultaneously, thereby increasing the overall speed of memory operations. This technique is particularly useful in situations where the

**Set-II**

**4. Explain the process of fetching a word from the memory. Take a suitable example to discuss the same.**

**Ans 4.**

Fetching a word from memory is a fundamental process in the field of computer architecture, and it involves several steps to retrieve data from a memory location. To illustrate this process clearly, let's consider an example where a computer system needs to fetch the word "DATA" stored at a specific memory address.

**Understanding Memory**

**5. What is Interrupt driven I/O? Explain its full working through flowchart. 10**

**Ans 5.**

Interrupt-driven I/O is a method of controlling input/output operations between a computer and its peripherals, such as keyboards, printers, and disk drives. Unlike polling I/O, where the CPU regularly checks the I/O device to see if it requires attention, interrupt-driven I/O allows the device to notify the CPU when it needs to be serviced, thereby improving efficiency and performance.

**Concept of Interrupt-**

**6. What is synchronous and asynchronous data transfer? Discuss in detail. 10**

**Ans 6.**

**Introduction to Data Transfer**

In the realm of digital communication, data transfer is a critical process that enables the exchange of information between devices or systems. Two primary methods of data transfer are synchronous and asynchronous, each having unique characteristics and applications.

**Synchronous Data Transfer**