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| **SESSION** | **OCT 2024** |
| **PROGRAM** | **BATCHLER OF COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **IV** |
| **COURSE CODE & NAME** | **DCA 2203** |
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**Set-I**

**1. Explain the role and functionality of the segment registers in the Bus Interface Unit (BIU) of a microprocessor. Describe the purpose of the Code Segment (CS) register and the Stack Segment (SS) register, and how they interact with other components of the microprocessor. 5+ 5**

**Ans 1.**

**Role and Functionality of Segment Registers in the Bus Interface Unit (BIU) of a Microprocessor**

The **Bus Interface Unit (BIU)** in a microprocessor is responsible for managing the communication between the processor and the memory or I/O devices. It handles address calculations, data transfer, and memory segmentation. Segment registers are an integral part of the BIU, which is used to organize memory into segments and ensure efficient access to different sections of memory.

Segment registers divide the memory into logical segments, which helps in managing the 1 MB memory space of early processors like the Intel 8086. The BIU consists of four main segment

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**2. What is two pass Assembler? Define its advantages Over Single-Pass Assembler. 5+ 5**

**Ans 2.**

An assembler is a program that translates assembly language instructions into machine code, which can be directly executed by a microprocessor. Assemblers can be classified into two types based on the number of passes they make over the source code: **single-pass assembler** and **two-pass assembler**. The two-pass assembler processes the source code twice, while a single-pass assembler processes it only once.

**Two-Pass Assembler**

A **two-pass assembler** processes the assembly language program in two separate passes. In the

**3. Define the difference between macro and Function. Explain macro expansion and nested macro calls with the help of example.**

**Ans 3.**

**Difference Between Macro and Function**

A **macro** and a **function** are both used to define reusable code blocks in programming, but they differ significantly in their behavior, implementation, and execution. A **macro** is a preprocessor directive that substitutes code at compile time, while a **function** is a block of code that is executed at runtime.

Macros are expanded by the preprocessor before the actual compilation begins. The code in the

**Set-II**

**4. Define the different phases of the compiler. Explain the importance of the Symbol table in a compiler.**

**Ans 4.**

**Different Phases of the Compiler**

A compiler is a software tool that translates high-level programming code into machine code. The process of compilation is divided into multiple phases to ensure systematic and efficient code translation. These phases are as follows:

1. **Lexical Analysis**: This is the first phase of the compiler, where the source code is divided into meaningful units called **tokens**. Tokens include identifiers, keywords, operators, and

**5. Explain the differences between stream editors, line editors, screen editors, and structure editors, providing examples of each type. Discuss how each type of editor is suited to different editing tasks and user environments.**

**Ans 5.**

**Differences Between Stream Editors, Line Editors, Screen Editors, and Structure Editors**

Text editors are software tools used for creating and modifying text, and they can be categorized into different types based on their design and interaction modes: **stream editors, line editors, screen editors, and structure editors**. Each type of editor serves specific tasks and caters to different user environments.

**Stream Editors**

A **stream editor** processes text in a stream-like manner, meaning it edits input data sequentially

**6. Explain the main components of android architecture. Define the role of Dalvik Virtual Machine (DVM) in Android.**

**Ans 6.**

**Main Components of Android Architecture**

Android is an open-source operating system developed for mobile devices, and its architecture is organized into multiple layers to ensure flexibility, modularity, and efficient operation. The main components of Android architecture include the **Linux Kernel**, **Hardware Abstraction Layer (HAL)**, **Native Libraries**, **Android Runtime**, **Application Framework**, and **Applications**.

**Linux Kernel**

At the base of Android architecture lies the **Linux Kernel**, which acts as the core of the operating system. It provides essential features like process management, memory management, device