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| **SESSION** | **APR 2025** |
| **PROGRAM** | **MASTER OF COMPUTER APPLICATIONS (MCA)** |
| **SEMESTER** | **II** |
| **COURSE CODE & NAME** | **DCA6206 COMPUTER NETWORKS & PROTOCOLS** |
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**SET-I**

**Q1. What is a Computer Network? Explain the different types of computer networks with suitable examples. 3+6**

**Ans 1.**

**Q1. What is a Computer Network? Explain the Different Types of Computer Networks with Suitable Examples**

**Introduction to Computer Network**

A computer network is a collection of interconnected computers and other devices that are linked together to share data, resources, and applications. These connections can be established using wired media like cables or wireless technologies such as radio waves. The primary purpose of a computer network is to facilitate communication and data exchange among users and systems efficiently.

**Types of Computer Networks**

Computer networks are classified into several types based on their size, geographical coverage, and purpose. The major types are:

**Local Area Network (LAN)**

A Local Area Network is a small network, usually confined to a single building or campus. It

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**Q2. Describe the OSI reference model in detail, explaining the functions of each layer.**

**Ans 2.**

**OSI Model**

The OSI (Open Systems Interconnection) reference model is a conceptual framework developed by the International Organization for Standardization (ISO). It standardizes the functions of a telecommunication or computing system into seven distinct layers to enable interoperability and communication between heterogeneous systems.

**Layer 1: Physical Layer**

The physical layer is responsible for the physical connection between devices. It defines the

**Q3. Define Transmission Media. Explain any four types of guided transmission media.**

**Ans 3.**

**Transmission Media**

Transmission media refers to the physical path used for transmitting data between devices in a network. It serves as a communication channel through which signals such as electromagnetic waves or optical pulses travel. Transmission media are broadly classified into guided (wired) and unguided (wireless) media. Guided media include physical cables, while unguided media use air, vacuum, or water for data transfer.

**Guided Transmission Media**

Guided transmission media are physical mediums through which signals are directed along a

**SET-II**

**Q4. Differentiate between LAN, MAN, and WAN with suitable examples. Also, explain the concept of Network Topology.**

**Ans 4.**

**LAN, MAN, and WAN**

Computer networks are classified into various types based on geographical coverage and scale. The three most common types are Local Area Network (LAN), Metropolitan Area Network (MAN), and Wide Area Network (WAN). These classifications help organizations choose the most suitable networking infrastructure.

**Local Area Network (LAN)**

A LAN is a network that operates within a small geographical area, such as an office building, home, or school. It connects computers and peripherals to enable data and resource sharing.

**Q5. Explain the TCP/IP model. How does it differ from the OSI model?**

**Ans 5.**

**TCP/IP Model**

The TCP/IP model is the foundational framework of the Internet and modern networking. It was developed by the U.S. Department of Defense to ensure reliable communication in diverse network environments. It has four layers, each responsible for specific functions in data transmission.

**Layers of TCP/IP Model**

* **Application Layer** is the top layer and includes all protocols used for end-user

**Q6. What is an IP address? Differentiate between IPv4 and IPv6 addressing schemes**

**Ans 6.**

**IP Addressing**

An IP address is a unique identifier assigned to each device connected to a network that uses the Internet Protocol for communication. It functions as the device’s address, allowing it to send and receive data over the Internet or any IP-based network. IP addresses are essential for routing packets between devices across networks.

**Structure and Role of IP Addresses**

IP addresses operate at the network layer of the TCP/IP and OSI models. They contain two main