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| **SESSION** | **APRIL 2025** |
| **PROGRAM** | **BACHELOR OF COMPUTER APPLICATIONS (BCA)** |
| **SEMESTER** | **3** |
| **COURSE CODE & NAME** | **DCA2104 BASIC OF DATA COMMUNICATIONS** |
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**Set – I**

**Q1. Describe various trends in data communications and network technology. Explain Communication model in brief. 5+5**

**Ans 1.**

**Trends in Data Communication and Network Technology with Communication Model Explanation**

The field of data communication has evolved significantly with technological advancements. One of the most prominent trends is the increased reliance on wireless communication technologies such as Wi-Fi 6, 5G, and satellite-based internet. These technologies enable faster data transfer, reduced latency, and support for a larger number of devices, making them ideal for smart homes, IoT systems, and mobile communication.

Another trend is the convergence of voice, video, and data over a single network, enabled

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**Q2. List some difference baseband and broadband transmission with some examples**

**Ans 2.**

**Baseband and Broadband Transmission: Differences and Examples**

**Baseband Transmission**

Baseband transmission refers to a method of sending digital signals over a channel without modulation. In this type, the entire bandwidth of the transmission medium is used to send a single signal. It is commonly used in Local Area Networks (LANs), especially with Ethernet systems. Baseband transmission is cost-effective and efficient for short-distance digital communication.

A typical example of baseband communication is Ethernet (IEEE 802.3), which transmits

**Q3. Differentiate between guided and unguided transmission and with some examples?**

**Ans 3.**

**Comparison Between Guided and Unguided Transmission with Examples**

**Guided Transmission Media**

Guided transmission refers to data signals that are transmitted through a physical medium such as copper wires, coaxial cables, or fiber optic cables. These media guide the signal along a specific path, providing high reliability and protection from interference.

Common examples of guided media include:

* **Twisted Pair Cables**, used in telephone lines and LANs.
* **Coaxial Cables**, often used for cable television and older Ethernet networks.

**Set – II**

**Q4. Explain the process in Data exchanges in transmission line and explain different types of classifications? 5+5**

**Ans 4.**

**Process of Data Exchange in Transmission Line and Classification of Data Transmission**

**Data Exchange in a Transmission Line**

The process of data exchange in a transmission line involves the **transmission and reception of digital or analog signals** between two or more devices through a communication medium. It is the core function of any communication system and ensures that data flows accurately and efficiently from the sender to the receiver.

Data exchange begins with the sender converting data into signals suitable for transmission.

**Q5. Write short on synchronous and asynchronous transmission.**

**Ans 5.**

**Synchronous and Asynchronous Transmission**

**Data Timing in Communication**

In data communication, the way in which bits are timed and synchronized during transmission is critical. Data can be transmitted using either **synchronous** or **asynchronous** methods. Both are used to coordinate data exchange between devices but differ significantly in their implementation and efficiency.

**Synchronous Transmission**

**Q6. Differentiate between frequency hopping spread spectrum and direct sequence spread spectrum 10**

**Ans 6.**

**Frequency Hopping Spread Spectrum vs. Direct Sequence Spread Spectrum**

**Spread Spectrum Techniques**

Spread spectrum is a technique used in wireless communication to transmit signals over a wider frequency band than the original signal requires. This approach improves security, resistance to interference, and bandwidth utilization. The two main methods are Frequency