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| **SESSION** | **AUGUST2023** |
| **PROGRAM** | **BCA** |
| **SEMESTER** | **IV** |
| **course CODE & NAME** | **DCA2201/ Computer Networking** |
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**SET-I**

**1. Explain the seven layers of the OSI model in detail. Highlight the functions and responsibilities of each layer. 2+8**

**Ans 1.**

The seven layers of osi model

**1. The Physical Layer**

This layer is concerned with the transmission of raw bits over a communication channel. This layer coordinates the functions required to carry a bit stream over a physical medium. So, it deals with the hardware, such as electrical and mechanical specifications of the interface and transmission medium.

**2. Data Link Layer**

This layer transforms a raw transmission facility into a reliable link. In the data link layer, the sender breaks up the input data into data frames and transmits the frames sequentially. It makes

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**2. Distinguish between Byte-oriented and Bit-oriented protocols. Elaborate on various error detection codes. 5+5 10**

**Ans 2.**

**Byte-oriented vs. Bit-oriented Protocols:**

**1. Byte-oriented Protocols:**

* Unit of Information: In byte-oriented protocols, the smallest unit of information is a byte (usually 8 bits).
* Frames: The start and end of the frames are identified using unique byte patterns, often called flags. Because of this, if the flag byte accidentally appears in the data, byte stuffing or byte escape mechanisms are used to ensure that this byte is not misinterpreted as a frame delimiter.

**3. Explain distance vector routing algorithm. Differentiate between multicasts and broadcast routing. 5+5 10**

**Ans 3.**

In distance vector routing, each router maintains a table giving the best known distance to each destination and which link to use to reach there. These tables are updated by exchanging information with the neighbors. Distance vector routing is also known as distributed **Bellman-Ford** routing algorithm, after the researchers who developed it (Bellman, 1957; and Ford and Fulkerson, 1962). In this algorithm, each router maintains a routing table containing one entry for each router in the network. This entry has two parts: the preferred outgoing line to use for

**SET-II**

**4. Describe Traffic-aware routing. Compare choke packets and Hop-by-Hop Backpressure techniques. 2+8**

**Ans 4.  
Traffic-aware Routing:**

Traffic-aware routing refers to a routing technique where network paths are selected based on the current traffic conditions in the network. Instead of always using a static predetermined path, traffic-aware routing makes real-time decisions about the best path to use for a particular data packet, taking into consideration the congestion and capacity of different links and nodes in the network. The main objective is to optimize the use of network resources, improve throughput, reduce latency, and ensure better quality of service (QoS). Such a method can be invaluable,

**5. Explain name servers. Differentiate between static and dynamic web pages. 2+8**

**Ans 5.**

Name servers are fundamental components of the internet infrastructure, acting as the interpreters between human-readable domain names and IP addresses. When a user types a URL into their browser, such as "[www.example.com](http://www.example.com/)", it's a name server's responsibility to translate that domain name into an IP address, which is used by computers to identify each other on the network. This process is called Domain Name System (DNS) resolution. Name servers store these mappings in a database and can provide the corresponding IP address upon request. There

**6. Describe Virtual Private Networks.Write short notes on Pretty good privacy. 2+8 10**

**Ans 6.**

**Virtual Private Networks (VPNs):**

Many companies have offices located over many cities. Earlier, before public data networks, such companies leased lines from telephone companies for all of their locations. This type of network which is built up from company computers and leased telephone lines is called a private network. Leasing a dedicated T1 line between two locations costs more, and T3 lines are many times more expensive. In such a situation, when public data networks and internet appeared, many companies wanted to move their data to public network, without compromising the