

**Q.2** a. Explain various communication tasks performed by the data communication system.

**Answer: Page Number 8, 9 of Text Book**

b. Give the header format for the following protocols:

- (i) TCP
- (ii) UDP
- (iii) IPv4
- (iv) IPv6

**Answer: Page Number 29-31 of Text Book**

**Q.3** a. How does the Nyquist Bandwidth and Signal-to-noise ratio define the channel capacity? Explain.

**Answer: Page Number 78-81 of Text Book**

c. Explain the functioning of terrestrial and satellite systems in wireless transmission. Give their respective characteristics.

**Answer: Page Number 106-111 of Text Book**

**Q.4** a. Distinguish the following:

- (i) QAM and Amplitude Modulation (AM)
- (ii) Asynchronous and Synchronous transmissions

**Answer: Page Number 147-151, 167-171 of Text Book**

b. Discuss the need of CRC. For  $P = 110011$  and  $M = 11100011$ , calculate CRC code.

**Answer: Page Number 174 of Text Book**

**Q.5** a. Give an example to illustrate the functioning of sliding window protocol.

**Answer: Page Number 196-201 of Text Book**

b. Explain the working of Statistical Time Division Multiplexing (STDM). Give the respective frame formats and performance metrics.

**Answer: Page Number 242-247 of Text Book**

c. Explain the features of HDLC in data link control protocols. Explain various modes used in HDLC protocol.

**Answer: Page Number 207-209 of Text Book**

**Q.6** a. Compare datagram packet switching, virtual circuit packet switching and circuit switching. Also discuss their respective applications.

**Answer: Page Number 297 of Text Book**

b. Explain how backpressure and choke packet is used in congestion control.

**Answer: Page Number 362-363 of Text Book**

c. Give the comparison of Dijkstra's algorithm and Bellman-Ford algorithm used in routing.

**Answer: Page Number 350 of Text Book**

- Q.7** a. Explain the architecture of IEEE 802.11 WLAN. Compare 802.11a, 802.11b and 802.11g.

**Answer: Page Number 435-438 of Text Book**

- b. Explain the functions of a bridge. Give an illustration of three LANs connected by a bridge.

**Answer: Page Number 341-342 of Text Book**

- c. Explain CSMA persistence and backoff mechanism. Mention various types of persistence methods used in CSMA.

**Answer: Page Number 462 of Text Book**

- Q.8** a. Compare IPv6 and IPv4.

**Answer: Page Number 548-560 of Text Book**

- c. Draw the message formats of Internet Control Message Protocol (ICMP).

**Answer: Page Number 553 of Text Book**

- Q.9** a. Mention any four requirements of multicasting.

**Answer: Page Number 578-579 of Text Book**

- b. Explain the working of SMTP. Mention any four MIME content types.

**Answer: Page Number 712-719 of Text Book**

- d. Mention the sequence of operation performed in DNS.

**Answer: Page Number 744 of Text Book**

**Text Book**

Data and Computer Communications, Eight Edition (2007), William Stallings, Pearson Education Low Price Edition.