

2. Attempt any **four** parts of the following : **(5×4=20)**

- (a) Enlist the difference between message switching and packet switching.
- (b) Explain the meaning of the following terms relating to the CSMA/CD medium access control method :
 - (i) Broadcast mode
 - (ii) Collision and Carrier sense
- (c) Define and explain the various frame type in HDLC.
- (d) Explain the relationship between Data rate and Bandwidth.
- (e) Explain the meaning of the following operational modes of a communicational channel :
 - (i) Simplex and Duplex
 - (ii) Multicast and Broadcast.
- (f) Define the term “IP address”, “MAC address” and “hardware/physical address”. Also explain the terms “address pair” and “ARP cache”.

3. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Write short notes on the following :
 - (i) Cryptography
 - (ii) Bluetooth
- (b) What is CSMA/CD ? Consider building a CSMA/CD network running at 1Gbps over a 1 km cable with no

repeaters. The signal speed in the cable is 2,00,000 km/sec. What is the minimum frame size ?

(c) Define various protocol used in wireless LAN.

4. Attempt any two parts of the following : (10×2=20)

(a) Draw the TCP/IP network architectural model and explain the features of various layers. Also list the important protocols at each layer and describe its purpose. Briefly describe the difference between the OSI and TCP/IP architectural mode.

(b) Describe the specification and characteristics and application of the following devices :

- (i) Routers
- (ii) Bridge
- (iii) Repeaters
- (iv) Switches

Also show diagrammatically where are these devices are placed in a network setup.

(c) What is congestion control ? Explain, suppose that the TCP congestion window is set to 18 kb and a time out occurs. How big will the window be if the next four transmission bursts are all successful ? Assume that the maximum segment size is 1kb.

5. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Explain IPv6 newer protocol. What are its advantages over IPv4 ? Discuss.
- (b) Briefly explain the issues involved in using ATM technology in LANs.
- (c) Several protocols such as Ethernet, Token ring, FDDI are used commonly in LAN. Discuss the functionalities of these three technologies and differences among them.