

Roll No. ....

Total Pages : 04

**016405**

**May 2024**

**B.Tech. (CEDS) (Fourth Semester)**

**Computer Networks (PCC-CS-602)**

*Time : 3 Hours]*

*[Maximum Marks : 75*

**Note :** It is compulsory to answer all the questions (1.5 marks each) of Part A in short. Answer any *four* questions from Part B in detail. Different sub-parts of a question are to be attempted adjacent to each other.

**Part A**

1. (a) What is piggybacking ? 1.5
- (b) What are the number of cables required in mesh topology ? 1.5
- (c) The subnet mask for a particular network is 255.255.31.0. Which of the following pairs of IP addresses could belong to this network ? 1.5
  - (i) 172.57.88.62 and 172.56.87.233
  - (ii) 10.35.28.2 and 10.35.29.4

- (iii) 191.203.31.87 and 191.234.31.88
- (iv) 128.8.129.43 and 128.8.161.55
- (d) DSSS system spreads the baseband signal by.....the baseband pulses with a pseudo noise sequence. **1.5**
- (e) What is the purpose of IEEE 802.11 specifications ? **1.5**
- (f) A network using CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time (including the delays in the devices and ignoring the time needed to send a jamming signal) is  $25.6 \mu\text{s}$ , what is the minimum size of the frame ? **1.5**
- (g) Station A uses 32 byte packets to transmit messages to Station B using a sliding window protocol. The round trip delay between A and B is 80 milliseconds and the bottleneck bandwidth on the path between A and B is 128 kbps. What is the optimal window size that A should use ? **1.5**
- (h) What is the purpose of DHCP protocol ? **1.5**

- (i) What is the purpose of SNMP protocol ? 1.5
- (j) What is the difference between physical address and logical address ? 1.5

### Part B

2. (a) What is the minimum hamming distance of the following strings 010, 011, 101 and 111. 10
- (b) Explain the FHSS technique for data transmission. 5
3. (a) Explain the CRC coding and decoding mechanism by taking example of 1001 as dataword in  $C(7, 4)$  scheme. 5
- (b) Assume in stop and wait ARQ system, the bandwidth of the line is 1 Mbps and 1 bit takes 30 ms to make a round trip. What is the bandwidth delay product ? If the system data frames are 1000 bits in length, what is the utilization percentage of the link. 10
4. (a) Explain why the window size should be  $< 2^m$  in Go back n ARQ. where  $m$  is the size of the sequence number field in bits. 5

- (b) Draw the flowchart of the CSMA/CD protocol. 5
- (c) What is the difference between OSI model and TCP/IP model ? 5
5. (a) What is the difference between UDP and TCP ? 5
- (b) A slotted ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the throughput if the system (all stations together) produces : 10
- (i) 1000 frames per second
  - (ii) 500 frames per second
  - (iii) 250 frames per second.
6. (a) What is the difference between IPv4 and IPv6 addressing ? 10
- (b) Explain the basic concepts of cryptography. 5
7. (a) Explain the token bucket algorithm in detail. 5
- (b) Write short notes on the following : 10
- (i) DNS
  - (ii) WWW.