Exam.Code:0935
Sub. Code: 6673

2074

B.E. (Electrical and Electronics Engineering)

Fifth Semester

PC-EE-505: Computer Networks

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part.

x-x-x

Q1a) What are the main uses of computer networks? (2 Marks)

b) What are the various design issues of data link layer? (2 Marks)

c) Draw IPv4 header format. (2 Marks)

d) State the difference between TCP and UDP protocols? (2 Marks)

e) Explain how parity bits contribute to error detection? (2 Marks)

Part-A

Q2a) What are the characteristics of optical fiber cables, and how do they differ from copper cables? Discuss the concept of wireless communication and its applications in the physical layer?

(5 Marks)

b) How does the TCP/IP model map to the OSI model? Explain the responsibilities of the Network Interface layer in the TCP/IP model? (5 Marks)

Q 3a) Explain how packet switching handles network congestion better than circuit switching. Compare and contrast packet switching and circuit switching in terms of efficiency.(5Marks)

b) Explain the purpose and features of the IEEE 802.3 standard. Discuss the advancements introduced by Fast Ethernet (IEEE 802.3u) and Gigabit Ethernet (IEEE 802.3ab)? (5 Marks)

Q 4 a) Discuss how slotted ALOHA reduces the probability of collisions compared to pure ALOHA? Explain the relationship between frame length and slot duration in slotted ALOHA? (5 Marks)

b) What is Automatic Repeat Request (ARQ), and how does it contribute to error detection and correction? Discuss the operation of Stop-and-Wait ARQ and its limitations? (5 Marks)

P.T.O.

Part-B

Q5a) Explain the concept of subnetting and its benefits in IP networks. Discuss supernetting and its role in optimizing IP address space usage. (5 Marks)

b) Explain the process of establishing a TCP connection using the three-way handshake. Discuss how TCP ensures reliable data delivery through mechanisms like acknowledgment and retransmission. (5 Marks)

Q6 a) Explain how the presence or absence of end-to-end feedback influences congestion control in datagram and virtual circuit subnets? (5 Marks)

b) Explain how QoS mechanisms are implemented at the Network Layer to prioritize traffic? (5 Marks)

Q7a) Discuss the primary functions of the Application Layer in a computer network. Explain the key differences between the Application Layer and the Presentation Layer. (5 Marks)

b) Explain how ARP caching improves network efficiency. Discuss potential security issues related to ARP and how to mitigate them. (5 Marks)

x-x-x