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MORNING

Uni. Roll No. ....

19 JUN 2023

Program: B.Tech. (Batch 2018 onward)

Semester: 4th

Name of Subject: Data Communication and Computer Networks

Subject Code: PCIT-103

Paper ID: 16043

Scientific calculator is Not Allowed

Detail of allowed codes/charts/tables etc. Nil

Time Allowed: 03 Hours　　　　　　　　　　　**Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A　　　　　　　　　　　**[Marks: 02 each]**

Q1.

　a)　Calculate BW of noiseless channel having max bit rate of 12 kbps & 4 signal levels.

　b)　What are the three criteria necessary for an effective and efficient network?

　c)　List the various issues in data link layer?

　d)　Point out the metrics used in determining the best path for a routing protocol?

　e)　Define piggybacking?

　f)　Define the IEEE 802.3 frame format.

Part – B　　　　　　　　　　　**[Marks: 04 each]**

Q2.　Compare Circuit switching with Packet switching.

Q3.　What is hamming code? Generate the hamming codeword for the ASCII character "U"= 1010101. Assume even parity for the hamming code.

Q4.　Compare between Pure and slotted ALOHA.

Q5. Explain in detail   a) E-mail   b) Domain Name System

Q6. Derive the relation for protocol performance for a) Stop and wait flow control mechanism. b) Sliding window protocol mechanism.

Q7. How IP addresses are represented? How does ARP and RARP works?

Part – C   **[Marks: 12 each]**

Q8. If a periodic signal is decomposed into five sine waves with frequencies of 200,400, 600, 800, and 1000 Hz, what is its bandwidth? Draw the spectrum, assuming all components have maximum amplitude of 10 V.

OR

Describe the working of Leaky bucket regulator. A computer on 6 Mbps network is regulated by token bucket. The token bucket is filled at the rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the fill of 6Mbps?

Q9. Develop with examples the three mechanisms by which congestion control is achieved in TCP. Differentiate these mechanisms.

OR

Describe the services provided to upper layers by transport layer. Compare UDP and TDP.

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