

Roll No.

Total No. of Questions : 13]

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J-3177[S-1033]

[2037]

MCA (Semester - 2nd)

DATA COMMUNICATION & COMPUTER NETWORKS (MCA - 203)

Time : 03 Hours

Maximum Marks : 75

Instruction to Candidates:

- 1) Section - A is **compulsory**.
- 2) Attempt any **Nine** questions from Section - B.

Section - A

Q1)

(15 × 2 = 30)

- a) What is the difference between synchronous and asynchronous signals?
- b) How is interference avoided by using FDM?
- c) How is redundancy related to error detection and correction.
- d) Explain the difference between Telephone and leased line communication channels.
- e) Give examples of where star and ring topologies will be useful.
- f) What is the role of CSMA/CD Protocol?
- g) Why we need network reference models?
- h) Why we need multiplexing in communication channels?
- i) Differentiate between pure Aloha and slotted Aloha.
- j) What are important characteristics of STDM?
- k) How leaky bucket algorithm is different from token bucket algorithm?
- l) List the major design issues at transport layer level.
- m) Why network standardization is too important in today's world?
- n) How fourier analysis is important in data communication?
- o) Differentiate between STP & UTP Cable media.

P.T.O.

Section - B

(9 × 5 = 45)

- Q2)** Demonstrate with the help of suitable example how the digital data is suitable for communication purposes than analog data?
- Q3)** Write a short note on IEEE 802 standards for LAN.
- Q4)** The 66 low-orbit satellites in the Iridium project are divided into six necklaces around the earth. At the altitude they are using, the period is 90 minutes. What is the average interval for handoffs for a stationary transmitter.
- Q5)** What is the difference between a process-to-process delivery and a host-to-host delivery?
- Q6)** Do port addresses need to be unique? Why or why not? Also Explain why port addresses are shorter than IP addresses?
- Q7)** Write a short note on Shannon's theorem.
- Q8)** Imagine a flow specification that has a maximum packet size of 1000 bytes, a token bucket rate of 10 million bytes/seconds, a token bucket size of 1 million bytes, and a maximum transmission rate of 50 million bytes/seconds. How long can a burst at maximum speed last?
- Q9)** The IP networks 192.168.130.0 is using the subnet mask 255.255.255.224. What subnets are the following hosts on:
- 192.168.130.10
 - 192.168.130.67
 - 192.168.130.93
 - 192.168.130.199
 - 192.168.130.222
 - 192.168.130.250
- Q10)** If you have to design a reliable byte-stream protocol that uses a sliding window (like TCP). This protocol will run over a 1-Gbps network. The RTT of the network is 140 ms, and maximum segment life is 60 seconds. How many bits would you include in the AdvertisedWindow and SequenceNum fields of your protocol header?

Q11) Explain the use of CRC procedure for error detection and correction with suitable example.

Q12) Discuss in brief about routers and switches,

Q13) Explain the role of sliding window protocol with the help of suitable example.

