

GANPAT UNIVERSITY
M. Tech Semester - II Computer Engineering
Regular Examination June-July, 2012
3CE205: Satellite Networking (Elective II)

Time: 3 Hours]

[Total Marks: 70

Instructions:

1. Attempt all questions.
2. Figures to the right indicate full marks
3. Each section should be written in a separate answer book

SECTION-I

- Q-1. (A) Differentiate multiplexing & multiple access. [3]
 (B) Differentiate transmission delay & propagation delay. Explain the following equation and each term of the equation: [5]

$$D = t_t + t_{up} + t_i + t_{down} + t_s + t_q$$

Calculate t_t to transmit an ATM cell at a 6 Mbit/s link.

- (C) Discuss the concept of satcom system. [4]

OR

- Q-1. (A) Discuss the differences between satellite networking & terrestrial networking issues. [4]
 (B) Discuss the impact of satellite burst errors on the ATM layer. [4]
 (C) Assume that you have to design a satcom system for the applications which may generate bursty traffic and content could be simple text or multimedia. Suggest the modifications required at each layer of the network protocol stack with different options for underlying technologies. In your opinion, what would be the best design option? [4]

- Q-2. (A) Differentiate Geosynchronous & Non-Geosynchronous satellite orbits. [3]
 (B) Explain the concept of satellite with ATM on-board switch. Describe the types of onboard switches with their advantages & disadvantages. [6]
 (C) Discuss the concept of Time domain & Frequency domain. [2]

OR

- Q-2. (A) Differentiate Synchronous & Asynchronous transfer mode. [3]
 (B) Explain the concept of virtual path, transmission path & virtual circuits in ATM. Describe ATM UNI cell format in brief. [4]
 (C) Describe DVB over Satellite. [4]

- Q-3. **Answer the following** [12]

- (A) Explain the concept of satellite transponders. Also discuss in brief about satellite footprints.
 (B) A data link protocol has the following characteristics:

Data length	100 bytes
Header length	8 bytes
Channel capacity	2 Mbit/s
Acknowledgement frame length	8 bytes
Service & propagation delay	0.15 ms

- i. Estimate the maximum possible efficiency of this system if the protocol operates in a simple 'stop & wait' manner using positive acknowledgments.
 - ii. In order to maximize link efficiency the stop & wait protocol is to be changed into a sliding window protocol. Estimate an appropriate window size.
- (C) Describe the advantages & disadvantages of Satellite based networks in brief.

SECTION-II

- Q-4. (A) Explain how satellite link affect the performance of TCP in details [6]
(B) What are TCP variations? Explain Reno in details. [6]

OR

- Q-4. (A) Describe TCP characteristics. [6]
(B) Explain TCP Tahoe & differentiate Tahoe & Reno in brief. [6]

- Q-5. (A) Describe TCP New Reno. How it differs from Reno? [6]
(B) How TCP Tahoe, Reno & New Reno detect the congestion? Can we improvise it? [3]
(C) Describe the concept of Data Receiver reneing [2]

OR

- Q-5. (A) Discuss the performance of Tahoe, Reno & New Reno in presence of multiple losses in a single window. [4]
(B) Explain TCP Vegas in details. [4]
(C) What is the difference between TCP spoofing & TCP splitting. [3]

- Q-6. **Answer the following.**
- (A) Discuss the concept of SACK. Explain the performance of TCP with SACK & without SACK. [4]
- (B) Describe following TCP enhancements: [4]
- i. Path MTU Discovery
 - ii. Window Scaling
 - iii. Large initial window
 - iv. Byte Counting
- (C) Explain the concept of Performance Enhancing Proxy. Do you know any commercial PEP? [4]

END OF PAPER