Student Exam No._____

GANPAT UNIVERSITY

M. Tech. Semester: III Information Technology
Regular Examination December 2013
3IT302: Satellite Networking (Elective IV)

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

Que.1	[A]	Write the advantages and disadvantages of satellite communication.	[4]
	[B]	Explain the concept of satellite transponders with block diagram.	[4]
	[C]	Name and define three modes of multiple access. Differentiate multiplexing and multiple access.	[4]
		OR	
Que.1	[A]	Differentiate application and service. Discuss different types of satellite services.	[4]
	[B]	Explain the concept of earth station receivers with block diagram.	[4]
	[C]	What is bit error rate and packet error rate? What is the impact of bit level error on packet level?	[4]
Que.2	[A]	Explain the concept of transmission path, virtual path and virtual channel in ATM network. What is the function of the VCI and VPI?	[5]
	[B]	Differentiate geostationary and non-geostationary orbit in details. What is a Van Allen radiation belt?	[4]
	[C]	Why the packets are of the same length in ATM?	[2]
		OR	
Que.2	[A]	Explain characteristics and advantages of asynchronous transfer mode.	[5]
	[B]	How satellite is balanced in an orbit? What is the importance of satellite spacing?	[4]
	[C]	Write the advantages of inter-satellite links.	[2]
Que. 3	[A]	Explain following equation and each term of equation. $D = t_t + t_{up} + t_i + t_{down} + t_s + t_q$ Calculate t_t to transmit an ATM cell at an 8 Mbit/s link.	[3]
	[B]	Explain DVB over satellite. What is DVB-RCS?	[4]
	[C]	Compare transparent satellites with on-board switch and on-board processing satellites. List out the different types of onboard switches. Which type of switch is more suitable for satellite network?	[5]

SECTION – II

Que.4 [A] Explain how satellite link affect the performance of TCP in details. [4]

[B] Differentiate TCP Tahoe, TCP Reno and TCP New Reno. [4]

[C] Describe following TCP enhancements. [4]

(1) TCP for Transaction

(2) Large initial window

OR

Que.4 [A] Explain TCP Vegas in brief. [4]

[B] Explain Space Communication Protocol Specification Transport Protocol in brief. [4]

[C] Explain how delayed ACKs after slow start and byte counting can improve TCP performance over satellite links. [4]

Que.5 [A] Differentiate TCP Hybla and TCP Reno in detail. What are the performance issues with TCP Hybla? [5]

[B] Explain TCP Westwood. What functionality do TCP Peach and TCP Westwood have in common? [6]

OR

Que.5 [A] What is the goal of TCP Hybla? How does TCP Hybla achieve it? Discuss the performance of TCP Hybla in case of congestion and link error. [5]

[B] Differentiate TCP Westwood and TCP Reno in detail. [4]

[C] Explain the performance of TCP with SACK and without SACK. [2]

Que.6 [A] Explain packet pair algorithm in brief. [3]

[B] Consider following Sliding Window protocol parameters. [4]

n = number of packets within the window

L = packet size in bits = 10 Kb

R = link rate in bits/second = 10 Mbps

RTT = round trip time in seconds = 100 msec

W = window size in bits = n * L

(1) How long does it take to send the first packet?

(2) What is the Bandwidth-Delay product for this problem, how many packets can be in transit?

[C] Explain the concept of Performance Enhancing Proxy. What is difference between TCP spoofing and TCP splitting? [5]

END OF PAPER