Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Online-End Semester Examination

November 2020

Max. Marks: 60   Duration: 3 Hrs.

Class: B.E./BTech.   Semester: VII

Course Code:ELE 73B   Branch: ETRX

Name of the Course: Computer and Communication Networks

Instruction:
1) All questions are compulsory
2) Assume suitable data if necessary
3) Figure to the right indicate full mark

Q. No.		Max. Marks	CO-BL-PI
1 a)	What are port numbers? Discuss with respect to open and reserved ports. UDP is a message-oriented protocol. TCP is a byte-oriented protocol. If an application needs to protect the boundaries of its message, which protocol should be used, UDP or TCP and Why?	5	1-2-2.1.2
b)	Compare and contrast: 1) Pure ALOHA and Slotted ALOHA 2) Flow control and Congestion control **(OR)**	10	2-3-2.2.4
	It's 1989. Alice and Bob are 4 hops apart on a datagram packet-switched network where each link is 100 mile long. Per-hop processing delay is 10 micro-seconds. Packets are 1500 bytes long. All links have a transmission speed of 56kbit/s (original speed of Internet backbone links in the 80s). The speed of light in the wire is approximately 125,000 miles/s. If Bob sends a 10-packet message to Alice, a) How long will it take Alice to receive the message up to the last bit (measured from the time Bob starts sending)? b)22 years later, all is the same, except that link transmission speed now is 1Gbit/s. How long will it take Alice to receive the message up to the last bit (measured from the time Bob starts sending)?	10	2-3-2.2.4

2 a)	Discuss roles and responsibility of the following OSI layers: 1) Networks layer 2) Presentation layer 3) Session layer 4)Physical layer 5) Application layer	10	1-2-2.1.2
b)	Write for each of the following in dotted decimal notation, the priority bits and class of IP address: 1)01011101000111110000000111110101 2)11111101100010100000111100111111 3)11111110100000010111111000000001 4)10011101100011111111110011001111 5)11011101100011111111110100001111	05	3-3-3.1.6
3a)	What are 1) Network Addresses 2) Broadcast addresses ? In case Class C IP addressing scheme, explain why one bit masking is treated as in-valid?	5	3-3-3.1.6
b)	With respect to cyber security, define the following: 1)Cryptography 2) Computer Security 3) Network Security List and briefly define categories of passive and active security attacks. **(OR)** List and briefly define categories of security services and mechanisms that cryptography provides.	10	4-3- 2.2.3
	Also using transposition cipher, encipher the message "**meet me after the yoga party**". Assume the **key depth as 2**.	10	4-3- 2.2.3
4a)	Assume that the administrators requirement is 262000 hosts and is using Class A network-id:- 10.0.0.0. Using the concept of FLSM, find out 1) subnets 2) customized subnet masks and 3) subnets range.	10	3-3-3.1.6
b)	How many keys are required for two people to communicate via a cipher? Evaluate using Diffie-Hellman key exchange technique. Users A and B use a common prime q=11 and a primitive root alpha=7. (i) If user A has private key XA=3.What is A's public key YA? (ii)If user B has private key XB=6. What is B's public key YB? (iii) What is the shared secret key?	05	4-3- 2.2.3