

JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May 2019 (Backlog only)
B. Tech. In Computer Science and Engineering, Semester V

Roll No.....

CSE503: COMPUTER NETWORKS

Time: 03 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	DHCP client and servers on the same subnet communicate via a) UDP broadcast b) UDP unicast c) TCP broadcast d) TCP unicast	
ii.	Which one of the following feature was present in SSH protocol, version 1? a) password changing b) periodic replacement of session keys c) support for public-key certificates d) none of the mentioned	
iii.	When the hop-count field in an IP packet reaches zero and the destination has not been reached, an ICMP _____ error message is sent back to the sending machine. A). Destination-unreachable B). time-exceeded C). Parameter-problem D). none of the above	
iv.	Which layer in the OSI reference model is responsible for determining the availability of the receiving program and checking to see if enough resources exist for that communication? A. transport B. network C. session D. application	
v.	Firewalls are often configured to block A) UDP traffic B) TCP traffic C) Both of the mentioned D) None of the mentioned	
vi.	In the transfer of file between server and client, if the transmission rates along the path is 10Mbps, 20Mbps, 30Mbps, 40Mbps. The throughput is usually a) 20Mbps b) 10Mbps	

	c) 40Mbps d) 50Mbps	
vii.	Choose the statement which is wrong incase of SMTP a) It requires message to be in 7bit ASCII format b) It is a pull protocol c) It transfers files from one mail server to another mail server d) None of the mentioned	
viii.	Which data communication method is used to transmit the data over a serial communication link? [A] Simplex [B] Half-duplex [C] Full duplex [D] All of above	
ix.	Which of the following terms is used specifically to identify the entity that is created when encapsulating data inside data link layer headers and trailers? a. Data b. Chunk c. Segment d. Frame e. Packet f. None of these there is no encapsulation by the data link layer.	
x.	Dual-stack approach refers to a) Implementing Ipv4 with 2 stacks b) Implementing Ipv6 with 2 stacks c) Node has both IPv4 and IPv6 support d) None of the mentioned	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Difference between CSMA and Collision free protocols?	
ii.	Two networks each provide reliable connection-oriented service. One of them offers a reliable byte stream and the other offers a reliable message stream. Are these identical? If so, why is the distinction made? If not, give an example of how they differ.	
iii.	What is the difference between repeater and bridge?	
iv.	How are a lost acknowledgment and a lost frame handled at the sender site?	
Q.3A	Draw the IP datagram header format. "IP datagram has a checksum field still it is called an unreliable protocol". Justify?	05
Q.3B	DNS uses UDP instead of TCP. If a DNS packet is lost, there is no automatic recovery. Does this cause a problem, and if so, how is it solved?	05
Q.4A	Suppose A sends two TCP segments back-to-back to B. The first segment has sequence number 90; the second has sequence number 110. How much data is in the first segment? Suppose that the first segment is lost, but the second segment arrives at B. In the acknowledgement that B sends to A, what will be the acknowledgment number?	05
Q.4B	Computer A uses stop and wait ARQ protocol to send packet to computer. A and B are separated by a distance of 50000 kms. i) How long does it take computer A to receive acknowledgement for a packet? ii) How long does it take computer B to receive a packet of size 2000 bytes if the throughput is 150 Mbps? Assume the speed to be velocity of speed of light. Neglect other delays.	05

OR

OR												
Q.4B	Why does FTP separate control and data connection? Why FTP cannot entertain many users concurrently?	05										
Q.5A	If the unit exchanged at the data link level is called a frame and the unit exchanged at the network level is called a packet, do frames encapsulate packets or do packets encapsulate frames? Explain your answer.	05										
Q.5B	What is sliding window protocol? Differentiate between stop-and wait ARQ and Go-back-N protocol.	05										
Q.6A	Consider sending a 2400-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 422. How many fragments are generated? What are the values in the various fields in the IP datagram(s) generated related to fragmentation?	05										
Q.6B	Subnet the class C network address 198.67.25.0 into eight subnets. Why are the 'all ones' and 'all zeroes' subnets not used ?	05										
Q.7A	Using OSPF algorithm, find the shortest path between all nodes. List the hops or links (node tuples) in the order that they are added by the algorithm.	05										
Q.7B	A router has the following (CIDR) entries in its routing table: <table> <tr> <th>Address/mask</th> <th>Next hop</th> </tr> <tr> <td>135.46.56.0/22</td> <td>Interface 0</td> </tr> <tr> <td>135.46.60.0/22</td> <td>Interface 1</td> </tr> <tr> <td>192.53.40.0/23</td> <td>Router 1</td> </tr> <tr> <td>Default</td> <td>Router 2</td> </tr> </table> For each of the following IP addresses, what does the router do if a packet with that address arrives? 135.46.63.10 135.46.57.14 135.46.52.2 192.53.40.7 192.53.56.7	Address/mask	Next hop	135.46.56.0/22	Interface 0	135.46.60.0/22	Interface 1	192.53.40.0/23	Router 1	Default	Router 2	05
Address/mask	Next hop											
135.46.56.0/22	Interface 0											
135.46.60.0/22	Interface 1											
192.53.40.0/23	Router 1											
Default	Router 2											
Q.8A	Imagine you have been appointed to design the network to be deployed in three	15										

	new buildings on a new university campus. Building A contains a dedicated computer room containing 10 very high performance dedicated servers. The servers provide services to students and staff who may need to gain access from the Internet as well as from within the university's own network. Building B contains the offices of 12 lecturers and 8 administrators who only use medium power desktop computers located on fixed desks. Building C contains two lecture rooms and a lounge/coffee shop. The lecture rooms have a desktop computer at the front for use by the lecturers, but some lecturers prefer to use their own laptop or tablet computer. All the students use laptop or tablet computers to take notes and keep in touch with their friends. An underground duct exists between building A and building B which are only 30 meters apart. Building C is 30 meters from building A but no ducts exist and installing one is not possible. a) What type of network should be deployed in the building that houses the dedicated computer room and what equipment should be installed? b) What type of network should be deployed in the second office building and what equipment should be installed? c) What type of network should be deployed in the teaching building and what equipment should be installed? d) What type of network connections should be used to link the buildings together and where and how should the university's Internet connection be made?	
Q.8B	Give a detailed explanation of the different types of physical media responsible for establishing a network connection.	05
	OR	
Q.8B	If the transmitted code word is 10011000 and the received code word is 11001001. What is the error word? Write transmitted code word, received code word and error word as polynomials.	05
Q.9A	The following is a dump of a TCP header in hexadecimal format. 00CD0018 00000EF1 00000D5D 502200D1 01BF0010 a. What is the source port number? b. What is the destination port number? c. What is the sequence number? d. What is the acknowledgment number? e. What is the length of header? f. What is the type of segment? g. What is the window size?	05
Q.9B	Why transport layer protocols like TCP and UDP are called end-to-end protocols. What is the difference between them?	05
	OR	
Q.9B	Both the TCP and UDP protocols use port numbers. What are these port numbers used for and what is meant by the term well-known port? Give an example of a well-known port.	05