

JK LakshmiPat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Special), January 2016

B. Tech. and B.Tech + M.Tech. in Computer Science and Engineering, Semester V
(Common for CSE & ECE)

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. Which of the following performs modulation and demodulation?
a. fiber optics b. satellite
c. coaxial cable d. modem
- ii. Which of the following communication modes support two-way traffic but in only one direction at a time?
a. simplex b. half duplex
c. three-quarters duplex d. all of the above
- iii. Layer one of the OSI model is
a. physical layer b. link layer
c. transport layer d. network layer
- iv. Which of the following application protocols are appropriate for email receiving?
(a) SMTP; (b) HTTP;
(c) IMAP; (d) POP3;
- v. An ARP reply is normally _____.
(a) broadcast (b) multicast
(c) unicast (d) none of the above
- vi. A port address in UDP is _____ bits long.
(a) 8 (b) 16
(c) 32 (d) none of the above
- vii. Acknowledgements, sequencing, and flow control are characteristic of which OSI layer?
(a) layer 2; (b) layer 3;
(c) layer 4; (d) layer 7
- viii. The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as:
a. modulation b. demodulation
c. synchronizing d. digitizing
- ix. LDAP stands for
(A) Light weight Data Access Protocol

	(B)Lightweight Directory Access Protocol. (C)Large Data Access Protocol. (D)Large Directory Access Protocol.	
x.	Telnet is a service that runs (A) Television on net (B)Remote program (C)Cable TV network (D) Tele next	
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Explain the reason why IPv6 addresses are represented in hexadecimal while IPv4 in binary?	
ii.	The data link layer in the IEEE standard is divided into two sublayers: LLC and MAC. Indicate the functions performed by each sublayer?	
iii.	Write the shortest compressed format of the following IPv6 addresses: • F005:0DB8:0000:1470:0000:0000:0200 • 0080:0000:0000:0000:0123:FB00:34DB:23FC	
iv.	Why are the 'all ones' and 'all zeroes' subnets not used?	
Q.3A	Convert the IP address whose hexadecimal representation is F22B9849. What does this address tell you about its location and why?	05
Q.3B	Most wireless access points and devices have the option of encrypting traffic. Which OSI layer is that encryption taking place?	05
Q.4A	An 8 bit byte with binary value 10100101 is to be encoded using an even-parity Hamming code. What is the binary value after encoding?	05
Q.4B	An end system sends 50 packets per second using the User Datagram Protocol (UDP) over a full duplex 100 Mbps Ethernet LAN connection. Each packet consists 1500B of Ethernet frame payload data. What is the throughput, when measured at the UDP layer?	05
	OR	
Q.4B	Why does distance-vector routing scale better than link-state routing? Be specific	05
Q.5A	A host was given the IP addresses 192.168.3.219 /27. Consider this address and indicate: • The network address to which the host belongs. • The network broadcast address to which the host belongs. • The total number of hosts available in the network.	05
Q.5B	Discuss how simple mail transfer protocol (SMTP) works? Can multimedia messages be transmitted using SMTP? Discuss.	05
	OR	
Q.5B	A TCP machine is sending windows of 65,535 bytes over a 1-Gbps channel that has a 10-msec one-way delay. What is the maximum throughput achievable? What is the line efficiency?	05
Q.6A	What is the class of each of the following addresses? a) 01111101 10101111 11011100 11001111 b) 11001101 10000111 10101100 11001011 c) 01111011 10101101 11010100 11001100 d) 10101011 10001111 11001100 11001011 e) 11010101 10101111 01110110 01001111	05

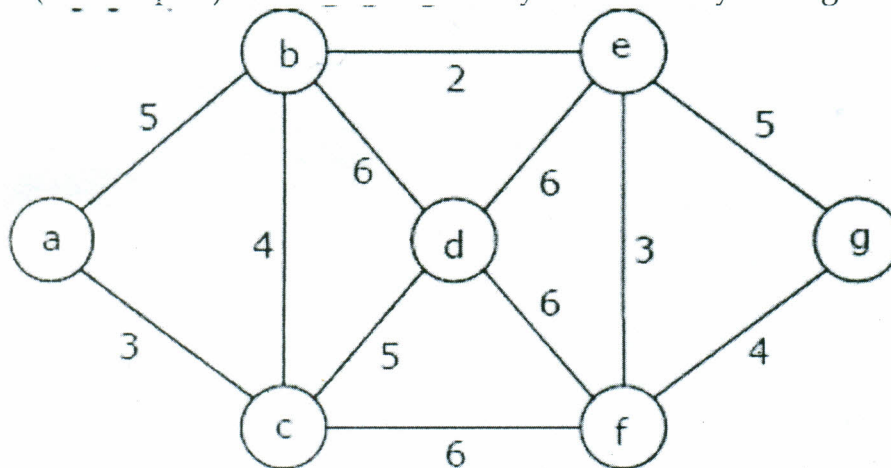
Find the class of each address.

- Q.6B Considering IPv4 classless addressing, an organization is granted a block of 05 addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 sub-blocks of addresses to use in its three subnets as shown below:

- One sub-block of 120 addresses.
- One sub-block of 60 addresses.
- One sub-block of 10 addresses.

Indicate the network IP address and the subnet mask for each of the sub-blocks.

- Q.7A Using OSPF algorithm, find the shortest path between all nodes. List the hops or 05 links (node tuples) in the order that they are added by the algorithm.



- Q.7B The routing table of a router is shown below:

05

Destination	Subnet Mask	Interface
128.75.43.0	255.255.255.0	Eth0
128.75.43.0	255.255.255.128	Eth1
192.12.17.5	255.255.255.255	Eth3
Default		Eth2

On which interface will the router forward packets addressed to destinations 128.75.43.16 and 192.12.17.10 respectively?

OR

- Q.7B The message 11001001 is to be transmitted using the CRC polynomial $3x^3 + 1$ to protect it from errors. The message that should be transmitted is 3x 05

- Q.8A For each of the following applications determine whether you would use TCP or 15 UDP and explain the reasons for your choice.

- File transfer
- Watching a real time streamed video

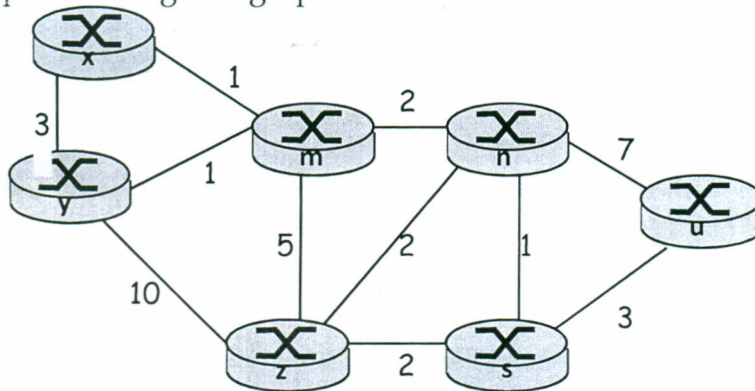
- iii. Web browsing
- iv. A Voice over IP (VoIP) telephone conversation

Q.8B List the functions of Presentation layer. 05

OR

Q.8B What is the difference between Link-Layer and Transport-Layer reliable data transfers? 05

Q.9A Explain how routing tables are constructed using distance vector algorithm with respect to the given graph of the network on all routers. 05



Q.9B Describe the "count-to-infinity" problem. (Use a picture is you find it helpful.) 05

OR

Q.9B What are the major advantages of STP over UTP Cables? 05