

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), November-December 2015

M. Tech. in Computer Science and Engineering, Semester I

Roll No.....

MTCS102: ADVANCE 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.
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Q.1A Objective type multiple choice questions (10 questions @ 1 mark) 10

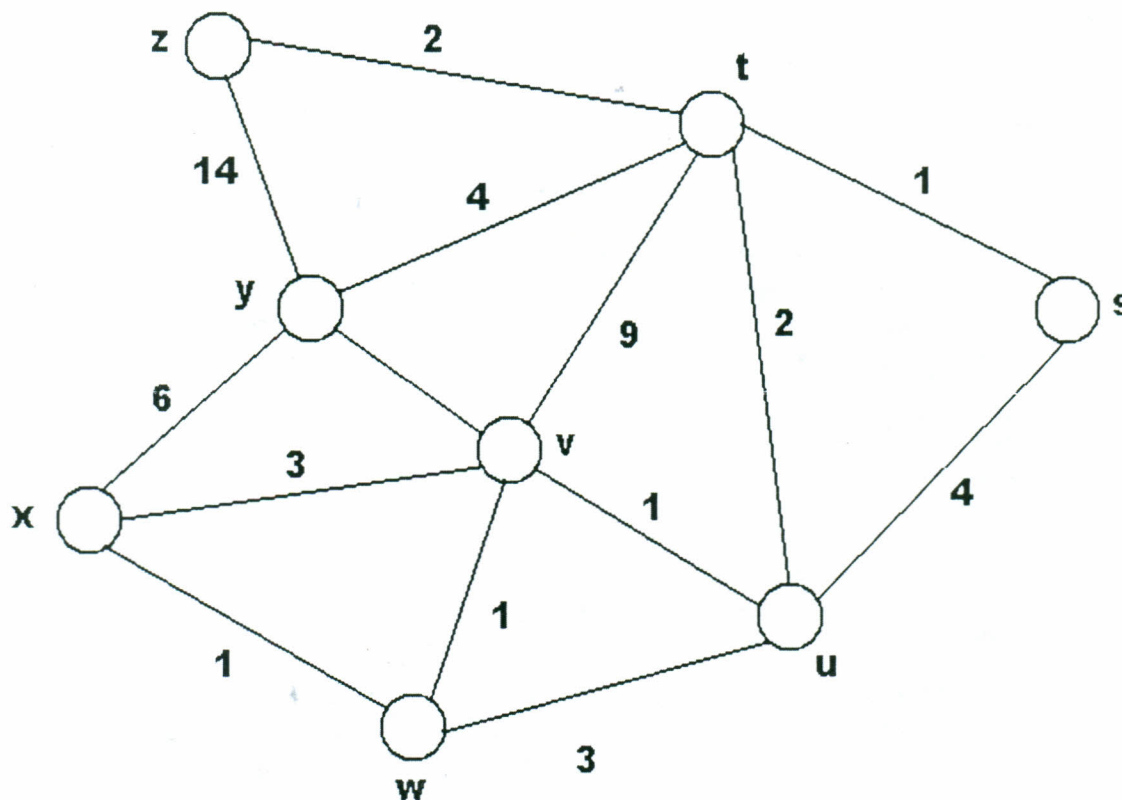
- i. A UDP datagram of _____ bytes is acceptable to all implementations
A 516
B 1024
C 256
D 512
- ii. The process of TCP on one computer marking a segment as segment 1, and the receiving computer then acknowledging the receipt of segment 1, is an example of what?
a. Data encapsulation b. Same-layer interaction
c. Adjacent-layer interaction d. The OSI model
- iii. What is the administrative distance of RIP?
A. 90 B. 100
C. 110 D. 120
- iv. IPv6 does not use _____ type of address
a) Broadcast b) Multicast
c) Unicast d) None of the mentioned
- v. What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.192 subnet mask?
A. 62 B. 64
C. 60 D. 32
- vi. Two connected routers are configured with RIP routing. What will be the result when a router receives a routing update that contains a higher-cost path to a network already in its routing table?
A. The updated information will be added to the existing routing table.
B. The update will be ignored and no further action will occur.
C. The updated information will replace the existing routing table entry.
D. The existing routing table entry will be deleted from the routing table and

- all routers will exchange routing updates to reach convergence.
- vii. You want to use full-duplex Ethernet instead of half-duplex. Which of the following will be benefits on your network?
- you will have more collision domains;
 - you will have less broadcast domains;
 - it should be faster;
 - it will eliminate the need of switches;
- viii. What is the type of network in which the topology changes from time to time?
- Wi-Fi
 - Cell Network
 - LAN
 - MANET
- ix. What IP address will you use to send a message to all devices connected to your network segment?
- 0.0.0.0;
 - 127.0.0.1;
 - 255.0.0.0;
 - 255.255.255.255;
- x. When data is encapsulated, which is the correct order?
- data, frame, packet, segment, bit;
 - segment, data, packet, frame, bit;
 - data, segment, packet, frame, bit;
 - data, segment, frame, packet, bit;
- Q.2 Short answer type questions (4 questions @ 2.5 marks) 10
- Explain Co-channel interference term with respect to wireless network.
 - What would happen if an IP packet is received with a checksum error? Does it return an error or drop the packet?
 - Which would be more suitable to carry high-speed communication traffic between a category 5 twisted pair and a category 7 twisted pair and why?
 - Explain Scattering term with respect to wireless network.
- Q.3A Convert the IP address whose hexadecimal representation is 53F28BC6. What does this address tell you about its location and why? 05
- Q.3B Considering Classless addressing, given one of the network address in a small organization as 190.63.135.43/28, find its first address, last address and number of addresses available in that network? 05
- Q.4A Differentiate between CIDR and DHCP. 05
- Q.4B Which of the following address does not belong to the same network (no subnetting)? Explain why? 05
- 130.31.23.31
 - 130.31.24.22
 - 130.32.23.21
 - 130.31.21.23
-
- OR
- Q.4B Illustrate the working nature of TCP queue management in detail. 05
- Q.5A Explain SONET structure. 05

Q.5B Discuss the applications of Ad-Hoc network. Also explain why routing is difficult in Ad-Hoc networks? 05

OR

Q.5B With the indicated link cost, use Dijkstra's shortest path algorithm to compute the shortest path from x to all network nodes. 05



Q.6A Differentiate between IMPA and POP3? 05

Q.6B Considering Classless addressing, given one of the network address in a small organization as 205.16.37.39/28, find its first address, last address and number of addresses available in that network?

OR

Q.6B What is idle listening in a wireless sensor network? Why is it a concern for WSN performance?

Q.7A Explain about the key role of WWW and URL in Internet with suitable tracing? 05

Q.7B An alternative to using MPLS for a global company is simply to connect each of its offices to the Internet and then to rely on the Internet itself to carry data between these offices. How does the Quality of Service (QoS) offered by the Internet in such a situation differ from that offered by an MPLS solution? 05

OR

Q.7B In IPv4, fragmentation reassembly is done at the endpoints, rather than at intermediary routers. Does IPv4 permit routers to reassemble packets? What is an important reason why reassembly be done at the end points?

Q.8A What is Multiprotocol Label Switching? Explain its working and operation 05

Q.8B Write and explain commands to configure router. 05

OR

Q.8B Imagine a wireless network in a transmission environment where multi path fading can neither be avoided nor ignored. For such an environment, suggest a suitable radio propagation model in order to calculating the power of received signal at a distance d from the source of radio signal. Also state how the variation of the received signal is computed in the model. 05

Q.9A a) In a class C subnet, find out the network address 05
i. IP address: 194.44.58.85 Mask: 255.255.255.192
b) What is the maximum number of subnets in class A /B using the following masks?
i. 255.255.192.0
ii. 255.192.0.0
iii. 255.255.0.0
iv. 255.255.224.0

Q.9B You have established a small/medium business enterprise that caters to the networking needs of business customers. Your new customer is Virtual University which is badly in need of a network upgrade. 15

The current network is an outdated "star" topology with Cat 3 cabling. It doesn't have Internet or wireless connectivity. The current network does not have features to support VoIP and other high bandwidth services.

Very little DHCP is provided and remote access is mainly provided to dedicated T1 lines.

The university has the following requirements:

Infrastructure

- a) Computer Science department (1000 users, all platforms (Windows, Mac, Linux, Unix)
- b) Physics department (250 users, mainly Windows and Unix)
- c) Graphics department (250 users, mainly Mac)
- d) Admin department (100 users, mainly Windows and Unix)

DHCP must be deployed throughout.

T1 lines must be replaced by VPNs

Cabling and topology upgrades must be done.

The servers must have secure access and must be located in the Computer Science building.

Provide a solution for the customer's needs. Your solution should present network topology and architecture, configurations, products, and recommendations for future upgrades.