

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), November 2016
B. 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.
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Q.1A Objective type multiple choice questions (10 questions @ 1 mark)

10

- i. Transmission data rate is decided by
 - a) network layer
 - b) physical layer
 - c) data link layer
 - d) transport layer
- ii. What is the access point (AP) in wireless LAN?
 - a) device that allows wireless devices to connect to a wired network
 - b) wireless devices itself
 - c) both (a) and (b)
 - d) none of the mentioned
- iii. HTTP client requests by establishing a _____ connection to a particular port on the server.
 - a) user datagram protocol
 - b) broader gateway protocol
 - c) transmission control protocol
 - d) none of the mentioned
- iv. Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?
 - a) HTTP
 - b) FTP
 - c) telnet
 - d) none of the mentioned
- v. Which one of the following is an internet standard protocol for managing devices on IP network?
 - a) media gateway protocol
 - b) dynamic host configuration protocol
 - c) internet message access protocol
 - d) simple network management protocol
- vi. Which standard TCP port is assigned for contacting SSH servers?

- a) port 21
 - b) port 22
 - c) port 23
 - d) port 24
- vii. SSH uses _____ to authenticate the remote computer.
- a) public-key cryptography
 - b) private-key cryptography
 - c) both (a) and (b)
 - d) none of the mentioned
- viii. IP assigned for a client by DHCP server is
- a) for unlimited period
 - b) for a limited period
 - c) not time dependent
 - d) none of the mentioned
- ix. Application layer offers _____ service
- a) End to end
 - b) Process to process
 - c) Both of the mentioned
 - d) None of the mentioned
- x. What is the IP Address range of APIPA?
- A. 169.254.0.1 to 169.254.0.254
 - B. 169.254.0.1 to 169.254.0.255
 - C. 169.254.0.1 to 169.254.255.255
 - D. 169.254.0.1 to 169.254.255.254
- Q.2 Short answer type questions (4 questions @ 2.5 marks) 10
- i. Show the packet flows for TCP connection establishment and termination?
 - 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. Give two examples of a 'collision free' protocol?
- Q.3A What is the cause of count of infinity problem in distance vector? How it is solved in link state algorithm? 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 The following is a dump of a TCP header in hexadecimal format. 05
- CB84 000D 001C 001C**
- a. What is the source port number?
 - b. What is the destination port number?
 - c. What is the total length of the user datagram?
 - d. What is the acknowledgment number?
 - e. Is the packet directed from a client to server or vice versa?
 - f. What is the client/server process?

Q.4B Suppose one IPv6 router wants to send a datagram to another IPv6 router, but the two are connected together via an intervening IPv4 router. How the datagram will be sent using tunneling? 05

OR

Q.4B For the network 156.26.93.0/19, answer the following questions: 05

- 1) How many IP addresses can be allocated?
- 2) What is the last IP address of given IP address?
- 3) What is the subnet mask?

Q.5A A router has just received the following new IP addresses: 57.6.96.0/21, 57.6.104.0/21, 57.6.112.0/21, and 57.6.120.0/21. If all of them use the same outgoing line, can they be aggregated? If so, to what? If not, why not? 05

Q.5B 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

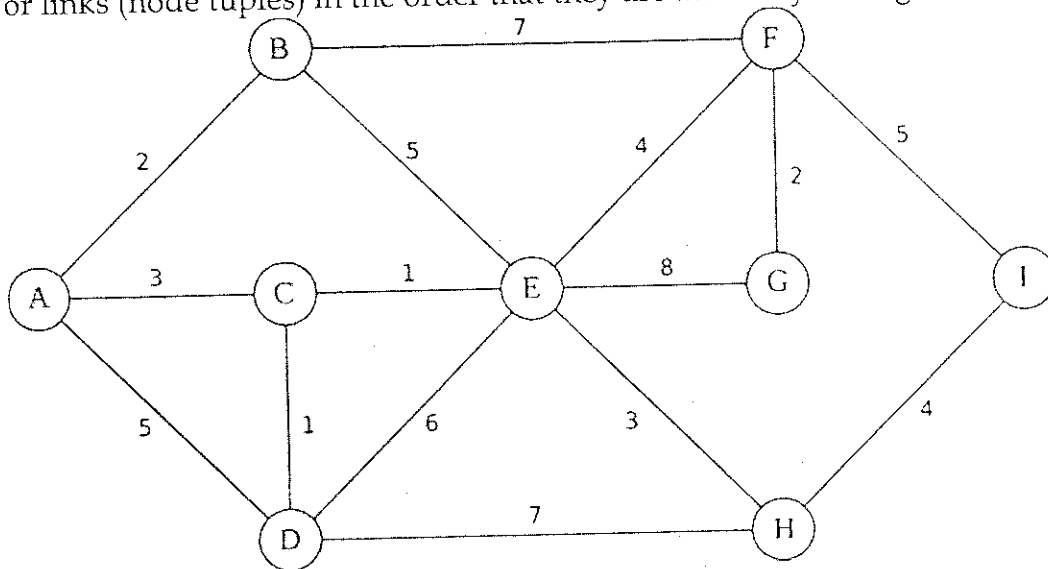
OR

Q.5B Why is SMTP not used for transferring e-mail messages from the recipient's mail server to the recipient's personal computer? 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 Use module 2 arithmetic to compute the CRC code for message 101101110011 with the generator 10011. 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: 05

Address/mask	Gateway
156.26.20.0/23	eth0
156.26.22.0/23	eth1
156.26.24.0/22	rout1
156.26.1.0/16	rout2
default	rout3

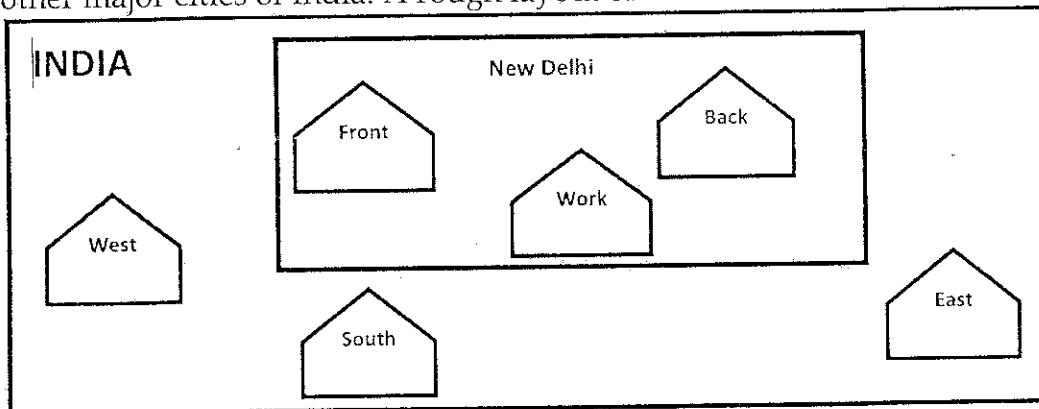
For each of the following IP addresses, what does the router do if a packet with that address arrives?

- 1) 156.26.21.10 2) 156.26.25.22 3) 156.26.27.2
4) 156.26.28.43 5) 129.130.12.27

OR

Q.7B What is DNS and what is it used for? If all DNS servers could be "crashed" (taken offline), what would happen to the Internet? 05

Q.8A Bhartiya Connectivity Association" is planning to spread their office in four major cities in India to provide regional IT infrastructure support in the field of Education & Culture. The company has planned to setup their head office in New Delhi in three location and have named their New Delhi office has "Front Office", "Back Office" and "Work Office". The company has three more regional offices as "South Office", "East Office" and "West Office" located in other major cities of India. A rough layout of the same is as follows: 15



Approximate distance between these office as per network survey team is as follows:

Place From	Place To	Distance
Back Office	Front Office	10 KM
Back Office	Work Office	70 Meter
Back Office	East Office	1291 KM
Back Office	West Office	790 KM
Back Office	South Office	1952 KM

In continuation of the above , the company experts have planned to install the following number of computers in each of their offices:

Back Office	100
Front Office	20
Work Office	50
East Office	50
West Office	50
South Office	50

(i) Suggest network type (out of LAN, MAN, WAN) for connecting each of the following set of their offices:

- A. Back Office and Work Office
- B. Back Office and South Office

(ii) Which device you will suggest to be produced by the company for connecting all the computers with in each of their offices out of the following devices?

- A. Switch/Hub
- B. Modem
- C. Telephone

(iii) Which of the following communication medium, you will suggest to be procured by the company for connecting their local office units in New Delhi for very effective and fast communication?

- A. Telephone Cable
- B. Optical Fiber
- C. Ethernet Cable

(iv) Suggest a cable/wiring layout for connecting the company's local office located in New Delhi. Also suggest an effective method/technology for connecting the company's regional office-"East Office", "West Office" and "South Office" with offices located in New Delhi.

Q.8B What are the differences between NAT and PAT? 05

OR

Q.8B Why does FTP separate control and data connection? Why FTP cannot entertain many users concurrently? 05

Q.9A An organization is granted the block 211.17.180.0/24. The administrator wants to create 32 subnets. 05

- a) What is the subnet mask in x.y.z.t/n notation?
- b) What is the range of addresses in first and last subnet?
- c) How many addresses are in each subnet?

Q.9B What is the need of protocol? Describe the purpose of the following protocols: HTTPS, TFTP, SNMP and SSH. 05

OR

Q.9B What is the different in between IMAP and POP3 Protocols? 05