Roll No.

BTIT502

V / VI Semester Examination April-May, 2019

B. Tech./B.Tech+M.B.A/B.Tech+M.Tech [IT / EC]

Computer Networks

Choice Based Credit System (CBCS)

Time: 3 Hrs. Maximum Marks : 6

Minimum Pass Marks: 2

Note: (1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks

(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.

(3) Draw the neat diagram, wherever necessary.

(4) Assume suitable data, wherever necessary.

Q.1(A) Explain the difference between connectionless and connection oriented services.

(B) Explain in brief the layered architecture services with its design issues.

(C) What is meant by Topology? Explain the types of Topologies with diagram, advantages and disadvantages.

OR

Explain the different types of Networking devices of computer network.

Q.2(A) Differentiate between the Framing Methods.

(B) What is meant by bit oriented protocol. Explain one of them.

(C) A sender want to send a data-word {10011011} using Hamming codes. Make complete codeword that will be sent and also check for error at receiving end.

OR

Calculate link utilization efficiency for stop and wait protocol, if bit rate=19.2kbps, frame size=960bits and propagation time=0.06Sec for window size=3 and 7.

Q.3(A) Explain how collisions can be handled in CSMA/CD.

(B) Differentiate between 802.3, 802.4 and 802.5 IEEE standards.

Contd.

(C) Measurement of slotted aloha channel with an infinite number of ... show that 20% slots are idle:

a. Calculate channel load and throughput.
b. Check whether channel is underload or overload.

OR

Consider building a CSMA/CD Network running at 1Gbps over a 1 ... cable with no repeaters, the signal speed in the cable is 2.00000km/s ... What is the minimum frame size?

Q.4(A) Differentiate between IPv4 and IPv6 with certain examples.

(B) Explain Bellman-ford algorithm.

(C) Describe static and dynamic routing with example and draw a chart ... routing techniques.

OR

Check whether IP address 167.22.57.89/29 is a valid IP address or not ... it is valid, write its network address, broadcast address, first host and ... host. If not, state the reason.

Q.5(A) Differentiate between TCP and UDP.

(B) Explain UDP header format.

(C) Write Short notes on:

a. DNS
b. SNMP
c. MIME

OR

Write Short notes on:

a. SMTP
b. Telnet
c. X.25

BTIT502

IV Semester Examination, May-June 2019

B.Tech/B.Tech. + M.B.A. / B.Tech. + M.Tech.

(CCE/CSE/CSE-CC/CSE-CYFS)

Computer Networks

Choice Based Credit System (CBCS)

Time: 3 Hrs. **Maximum Marks : 60**

Minimum Pass Marks: 24

Note: (1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.

(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.

(3) Draw the neat diagram, wherever necessary.

(4) Assume suitable data, wherever necessary.

Q.1(A) Why OSI model has layered architecture? What are the benefits of having layered approach? **03**

(B) Differentiate between the following:

a) Protocol and Interface

b) Connectionless and Connection oriented service. **03**

(C) Draw the layer structure of TCP/IP and compare the two reference model OSI and TCP/IP. **06**

OR

What are Network standardization explain briefly.

Q.2(A) Explain Flow and error control at data link layer. In which situations we don't need to employ error control techniques. **03**

(B) Suppose you want to develop an error recovery protocol for a link that is unreliable and delay sensitive, which of the following protocol, would you choose? Justify your answer

a) Stop and repeat

b) Selective Repeat

c) Go-Back-N **03**

(C) A 9-bit message with binary number 101101010 is to be encoded using an even-parity Hamming code. What is the least number of checks bits needed for this code? Then what is the bit pattern after encoding (with the least number of check bits)? **06**

Contd...

OR

Outline the generic operation of Go-Back-N and selective repeat protocol in data link layer.

Q.3(A) What is the need of MAC Sub-layer? Define MAC Addressing.

(B) How throughput is improved in slotted ALOHA over pure ALOHA.

(C) Draw the flow chart for the taxonomy of channel allocation protocols and discuss the static and dynamic channel allocation techniques.

OR

State your reason why CSMA/CD is preferred as channel allocation technique in Ethernet network? Describe different type of CSMA protocols.

Q.4(A) Write the difference between Dijkstra's algorithm & Bellman-ford algorithm with an example.

(B) Why IPv4 addresses is restricted to 4.2 billion? How can we overcome the problem of limited IP address range? Explain your answer? Can IPv6 solve range limitation problem?

(C) Check whether IP address 167.22.57.89/29 is a valid IP address or not. If it is valid write down its network address, broadcast address, first host and last host. If not state your reason?

OR

Discuss infinite loop and pinhole congestion problem of distance vector routing protocols. Also list various pro and cons of link state and distance vector routing protocols?

Q.5(A) Explain TCP connection establishment and connection termination.

(B) Explain the difference between TCP and UDP protocols. Provide an example of an application that uses TCP and an application that uses UDP.

(C) Write a detail note TCP congestion control techniques and discuss the approaches used for congestion control

OR

Write a short on following (Any three):

a) TCP Timers
b) Domain Name System (DNS)
c) Simple Network Management Protocol
d) TCP 3-Way handshaking

XXXXXX

Total No. of Questions: 05

Total No. of Printed Pages: 02

Roll No._____

BTIT502

V Semester Examination, December 2019

B.Tech./B.Tech.+MBA/B.Tech.+M.Tech.[CSE-BDA/CSE-CMC/IT]

Computer Networks

Choice Based Credit System (CBCS)

e: 3 Hrs.

Maximum Marks : 60

Minimum Pass Marks: 24

e: *(1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks each and part 'C' carries 6 marks.*
(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.
(3) Draw the neat diagrams, wherever necessary.
(4) Assume suitable data, wherever necessary.

Q.1(A) Explain the differences between connectionless and connection oriented services. **03**

(B) What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols? **03**

(C) Describe various layers of ISO-OSI reference model. Why TCP/IP suit have lesser layers than OSI Model? **06**

OR

Define the following term:
a) Protocol b) Interface c) Network Architecture

.2(A) Briefly describe the services provided by the data link layer. Define framing and the reason for its need. **03**

(B) What is piggybacking? What is its importance in data transfer? Explain. **03**

(C) Explain HDLC frame format in detail. Compare and contrast HDLC with PPP. **06**

OR

What do you mean by stop-and-wait protocol? Write sender-site and receiver site algorithm for stop-and-wait protocol.

3(A) Explain why the vulnerable time in ALOHA depends on the average time required to send out a frame but in CSMA depends on the propagation time? **03**

Contd....

(B) One hundred stations on a pure ALOHA network share a 1-Mbps channel. If frames are 1000 bits long, find the throughput if each station is sending frames per second.

(C) Explain 802.3 MAC frame format in detail.

OR

Explain non persistent, 1-persistent and 'p' persistent CSMA. Compare them in terms of delay and efficiency.

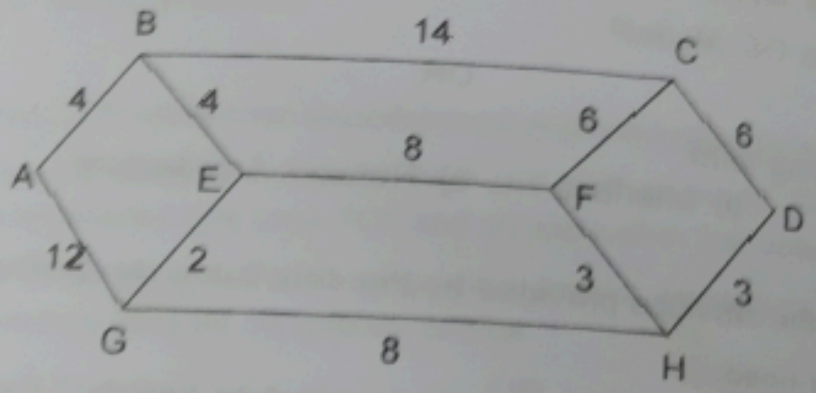
Q.4(A) Differentiate between OSPF & BGP routing strategies.

(B) In a block of addresses, the IP address of one host is 25.34.12.56/16. Find the network address and limited broadcast address of the block?

(C) Briefly define subnetting and supernetting. How do the subnet mask and supernet mask differ from a default mask in classful addressing? Explain.

OR

Apply Dijkstra's routing algorithm to calculate shortest path with source vertex 'A' and destination vertex 'D'.



Q.5(A) Differentiate between transmission control protocol and user datagram protocol.

(B) What is the purpose of FTP? What are the three FTP transmission modes?

(C) How connection is established and terminated in TCP using three way handshaking mechanisms? Explain.

OR

What is meant by congestion control? Explain the leaky bucket mechanism for congestion control.

XXXXX

Total No. of Questions: 05

Total No. of Printed Pages: 02

Roll No.: _____

BTIT 502

IV Semester Examination, May 2018

B.Tech. / B.Tech. + M.Tech. / B.Tech. + MBA [CSE /CCE]

Computer Networks

Choice Based Credit System (CBCS)

uration: 3 Hrs.

Maximum Marks : 60

Minimum Pass Marks: 24

te: *(1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.*
(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.
(3) Draw the neat diagram, wherever necessary.
(4) Assume suitable data, wherever necessary.

(A) What are two reasons for using layered protocols? Explain 03

(B) Differentiate between Connection oriented & Connectionless services. 03

(C) Describe functions of various layers of ISO-OSI reference Model. 06

OR

Explain the different ways in which the OSI reference model and TCP/IP reference model are the same. Enlist the ways in which they differ.

A) A bit string '0111101111101111110', needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing? 03

B) What is the maximum window size for data transmission using the selective reject protocol with n-bit frame sequence numbers 2^n or 2^{n-1}? Justify your answer. 03

C) Explain different sliding window protocols. 06

OR

Explain any one bit oriented protocol.

A) Briefly introduce static and dynamic channel allocation of LAN. 03

B) A group of N stations share 5.6 kbps pure ALOHA channel. Each station outputs a 100 bits frame on an average once every 1000 secs. Even if the previous one has not yet been sent. What is max. value of N ? 03

Contd.....

(C) Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?

OR

Write short note on:

a) IEEE802.3 b) IEEE802.4 c) IEEE802.5

Q.4.(A) Explain "Time to live" field in IP Datagram.

(B) What is the subnetwork address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0?

(C) Describe Bellman-ford algorithm.

OR

List deficiency of IPv4. Compare IPv4 and IPv6 header.

Q.5.(A) What is minimum and maximum size of UDP Datagram?

(B) Briefly introduce DNS.

(C) Differentiate between TCP Header and UDP Header. List the fields of TCP header that are missing from UDP header. Explain the reason.

OR

Write short note on:

a) FTP b) SMTP c) SNMP

XXXXXXX

Roll No.: _____

BTIT502

V Semester Examination, November 2018

B.Tech. / B.Tech. + M.Tech. / B.Tech. + MBA [IT]

Computer Networks

Choice Based Credit System (CBCS)

ation: 3 Hrs.

Maximum Marks : 60

Minimum Pass Marks: 24

(1) All questions carry equal marks, out of which part 'A' and 'B' carry 3 marks and part 'C' carries 6 marks.
(2) From each question, part 'A' and 'B' are compulsory and part 'C' has internal choice.
(3) Draw neat diagram, wherever necessary.
(4) Assume suitable data, wherever necessary.

(A) Explain the different transmission technologies used in computer networks. 03

(B) What are the disadvantages of a broadcast networks? Suppose that time is divided into discrete slots, with each of the n hosts attempting to use the channel with probability p during each slot. What fractions of the slots are wasted due to collisions? 03

(C) Define the following terms:

(i) Protocol (ii) Interface (iii) Services (iv) Network Architecture. 06

OR

Sketch a neat and labeled diagram of ISO-OSI Reference Model. Differentiate between OSI and TCP/IP model.

(A) Consider sliding window protocol with channel capacity 33 kbps, propagation delay is 250 m sec and frame size is 512 bits. What will be the optimum window size? 03

(B) Describe the selective repeat data link protocol. 03

(C) Explain the principle of operation of a CRC error detection method. Using generator polynomial $x^4 + x^3 + 1$ show how:

(i) The error detection bits are generated?

(ii) The received frame is checked for transmission errors? 06

OR

A series of information frames with a mean length of 1000 bits is to be transmitted across a data link 4000 km long at a data rate of 2 Mbps. If the link has a velocity of propagation of 2X108 m/sec and a BER of 10-4, determine the link efficiency using the following link protocols:

Contd.....

(i) Selective retransmission and a send window of 7

(ii) Go-Back-N and a send window of 127

Q.3.(A) Differentiated between ALOHA and slotted ALOHA.

(B) Consider building a CSMA/CD network running at 1 Gbps over a 1 km cable with no repeaters. The signal speed is 200 m/μ sec. What is the minimum frame size?

(C) Explain non-persistent, 1-persistent and 'p' persistent CSMA. Compare them in terms of delay and efficiency.

OR

Consider a slotted ALOHA system having four stations.

(i) If offered load G1 =0.15, G2 = 0.45, G3 = 0.3, G4 = 0.1 packets. Find individual throughput.

(ii) What will be total throughput if all stations have the same offered load 0.25 pkts/sec.?

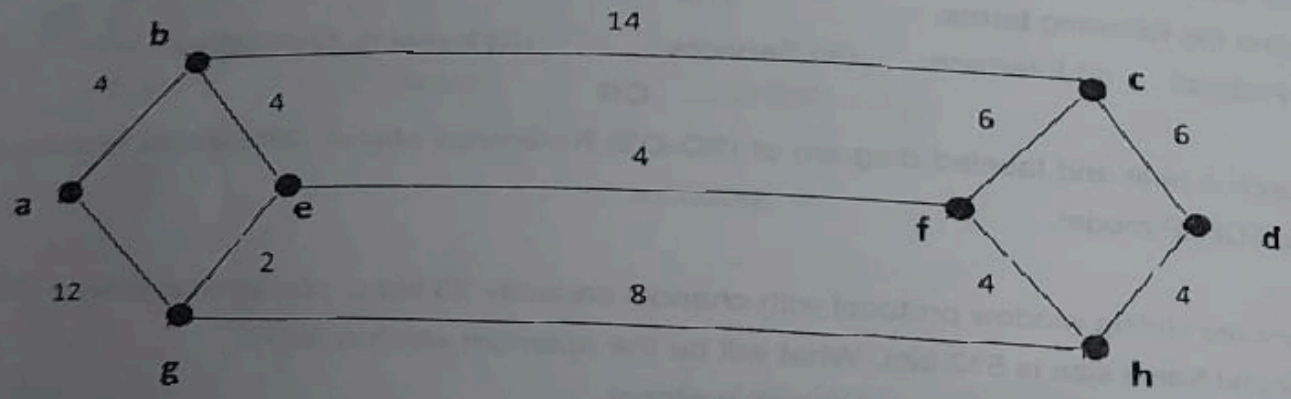
Q.4.(A) Differentiate between OSPF and BGP routing strategies.

(B) Explain the policies and algorithms used for prevention of congestion.

(C) In a 3-level hierarchical routing if there are 512 stations, calculate number of cluster, region/cluster and IMP per region to minimize size of routing table.

OR

Apply Dijkstra algorithm to calculate shortest path with source vertex 'a'.



Q.5.(A) Explain TCP Connection establishment and termination.

(B) What is silly window syndrome?

(C) What are the elements of transport layer?

OR

What are the functions of transport layer? Draw the segment structure of TCP.

xxxxxxx