USN **CS55**

B. E. Fifth Semester End Examination (SEE), Nov-Dec 2018

DATA COMMUNICATION NETWORKS

Model Question paper-1

Time: 3 Hours **[Maximum Marks: 100]**

Note:
1. **Answer ANY ONE from Question No. 1 and 2**
2. **Answer ANY ONE from Question No. 3 and 4**
3. **Answer ANY ONE from Question No. 5 and 6**
4. **Answer ANY ONE from Question No. 7 and 8**
5. **Answer ANY ONE from Question No. 9 and 10**

1. **a)** Explain the OSI reference model, with a neat figure, and briefly discuss the functions of each layer. **[10 Marks]**

b) Discuss in detail the different types of data representation in network communication. **[5Marks**]

(c) Describe in brief the modes of communication between two devices with supporting diagrams. **[5Marks]**

2. **OR**

a) Explain TCP/IP protocol suite with neat diagram. **[8Marks]**

b) Differentiate between Local Area Networks , Wide Area Networks and Metropolitan area networks. [**6 Marks]**

c) List the basic network topologies and explain any two in detail with supporting diagrams. [**6 Marks]**

3. **a)** Find the codeword, using CRC given data word "1001" and generator is"1011". **[10 Marks]**

b) Discuss how the hamming code is used in error detection and correction. **[10 Marks]**

OR

4. **a)** Explain in detail, Stop and wait ARQ protocol and discuss its advantage over stop-and-wait protocol. **[10 Marks]**

b) Explain pure ALOHA and Slotted ALOHA with supporting diagrams. **[10 Marks]**

5. a) Explain and derive delays in datagram packet switching. **[4 Marks]**

b) Consider the network in the Fig. 4(b). Use the Bellman Ford Algorithm to find the set of shortest path from node 2 to other nodes. Draw the shortest path tree. **[6 Marks]**

P.T.O

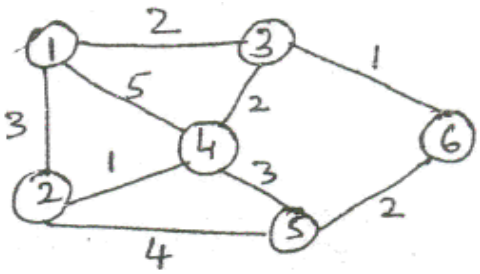

Fig.4(b)

c) Explain the FIFO and priority queue scheduling for managing traffic at packet level. **[10 Marks]**

OR

6. a) Compare Dijkstra's Algorithm and Bellman Ford algorithm. **[4 Marks]**

b) Draw the flow chart and explain leaky bucket policy. **[8 Marks]**

c) Discuss with the help of suitable diagrams, the routing in virtual circuit networks. **[8 Marks]**

7.

a) Explain the IP address classification. Identify the following IP addresses and their Address class: 200.58.20.165 128.167.23.20 16.196.128.50 **[6 Marks]**

b) Explain the following fields in the IPV6 packet header.
i) Flow label ii) Hop Count iii) Next Header **[6 Marks]**

c) Elaborate the fragmentation and reassembly in IPV4 with a supporting diagram. **[8 Marks]**

OR

8. a) Explain the different fields of IPV4 header with the help of a diagram. **[12 Marks]**

b) Write a note on IPV6 addressing with examples. **[8 Marks]**

9. a) Discuss in detail, the Routing information protocol, with the header format. **[8 Marks]**

b) Briefly describe the congestion control in TCP. **[6 Marks]**

P.T.O

c) Explain the significance of the following fields in the TCP segment.
i) Sequence number ii) Acknowledgement number iii) window size **[6 Marks]**

OR

10. a) Discuss the Domain Name Service in detail. **[12Marks]**

b) Write a note on HTTP. **[8 Marks]**

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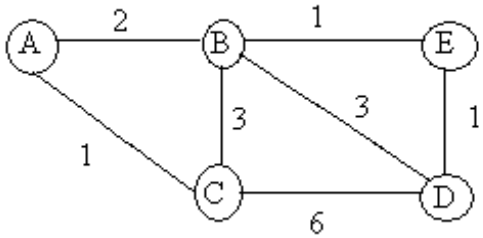
B. E. Fifth Semester End Examination (SEE), Nov -Dec 2018

DATA COMMUNICATION NETWORKS

(Model Question paper-2)

Time: 3 Hours **[Maximum Marks: 100]**

Note:	**Answer FIVE FULL questions.**	**Marks**
1(a)	Define data communication? Explain the fundamental characteristics and components of a data communication system.	**10M**
(b)	Explain TCP/IP reference model with the help of neat diagram	**10M**
	OR	
2(a)	With a neat diagram explain OSI reference model	**10M**
(b)	What is a physical topology? Describe the four basic topologies.	**10M**
3(a)	Draw a CRC encoder and decoder for CRC code with C (7, 4). Also explain how this CRC design works, with an example	**10M**
(b)	With the help of an example, explain the computation of internet checksum. Explain how the error detection is done, using internet checksum	**10M**
	OR	
4(a)	What is meant by channelization? Explain in detail CDMA.	**10M**
(b)	Discuss in detail CSMA /CA ii) CSMA/CD	
5(a)	What are datagram and virtual circuits? Distinguish between them	**10M**
(b)	Consider the network in the Fig. 4(b). Use the Dijkstra's Algorithm to find the set of shortest path from node 1 to other nodes. Draw the shortest path tree.  Fig. 4(b)	**10M**
	OR	
6(a)	Illustrate the equation for finish tag for packet by packet FIFO queueing method for traffic management	**10M**
(b)	Write a short note on (a)Admission Control (b)Policing	**10M**
7(a)	Explain the concept of classful addressing in IPv4 .	**10M**
(b)	Explain IPV6 header format and state any four advantages of IPV6	**10M**

	OR	
8(a)	Illustrate the concept of Fragmentation and Reassembly with the help of suitable diagrams	**10M**
(b)	Compare IPV4 and IPV6	**10M**
9(a)	Explain in detail, the operation of OSPF with relevant diagrams	**10M**
(b)	Explain the three way handshake for establishing a TCP connection, with a diagram.	**06M**
	Give the format of UDP basic header. Explain the significance of each field.	**04M**
	OR	
10(a)	Write a note on Electronic mail transfer	**10M**
(b)	Explain WWW in brief.	**10M**

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B. E. Degree (Autonomous) Fifth Semester End Examination (SEE), Nov/Dec 2018

Department of Computer Science & Engineering

DATA COMMUNICATION NETWORKS

(Model Question Paper - III)

[Time: 3 Hours] **[Maximum Marks: 100]**

Instructions to students:

1. **Answer ANY ONE from Question No. 1 and 2**
2. **Answer ANY ONE from Question No. 3 and 4**
3. **Answer ANY ONE from Question No. 5 and 6**
4. **Answer ANY ONE from Question No. 7 and 8**
5. **Answer ANY ONE from Question No. 9 and 10**

1	**a)**	Explain TCP/IP protocol suite, with neat diagram, and briefly discuss the functions of all the protocols of TCP/IP model.	**[08 Marks]**
	b)	Explain two possible types of connections to connect multiple devices to the same link at the same time. Give example for each type.	**[04 Marks]**
	c)	Distinguish between LAN, WAN and MAN with example	**[08 Marks]**
		OR	
2	**a)**	List the criteria that a network needs to meet. Explain each one in detail	**[06 Marks]**
	b)	With neat diagram explain mesh and bus topology with its advantages and disadvantages.	**[08 Marks]**
	c)	Explain the functions of Transport layer. Indicate the process to-process delivery with a supporting diagram.	**[06 Marks]**
3	**a)**	Explain CRC encoder and decoder with C(7,4). Give example.	**[10 Marks]**
	b)	Explain Internet checksum with steps for calculating checksum at sender site and steps for error detection at receiver site. Give example.	**[10 Marks]**
		OR	
4	**a)**	Explain stop-and-wait ARQ protocol with its Design and write sender site algorithm.	**[10 Marks]**
	b)	What is Channelization? Explain different protocols of Channelization with relevant diagrams.	**[10 Marks]**
5	**a)**	Write Bellman Ford Algorithm. Consider the network in fig.4(a) Use Bellman Ford Algorithm to find shortest path from all the nodes to node 7. Draw the shortest path tree.	**[08 Marks]**

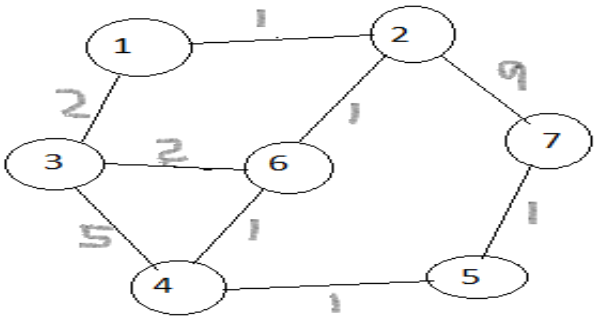

Fig.4(a)

b) With relevant diagram Explain fluid-flow and packet-by-packet weighted fair queueing. Compute finish tag for weighted fair queueing **[08 Marks]**

c) State advantages and disadvantages of virtual circuit packet switching network. **[04 Marks]**

OR

6 **a)** Compare Dijkstra's Algorithm and Bellman Ford algorithm. **[04 Marks]**

b) Draw the flow chart and explain leaky bucket policy. **[08 Marks]**

c) Discuss with the help of suitable diagrams, the routing in virtual circuit networks. **[08 Marks]**

7 **a)** Explain the different fields of IPV4 header with the help of a diagram. **[10 Marks]**

b) Write a note on IPV6 addressing with examples. **[10 Marks]**

OR

8 **a)** Explain formats of classfull IP addressing with neat diagram. **[06 Marks]**

b) Explain fragmentation and reassembly with neat diagram. Suppose a packet arrives at a router and is to be forwarded to an X.25 network having an MTU of 576 bytes. The packet has an IP header of 20 bytes and a data part of 1484 bytes. Perform fragmentation and include the pertinent values of the IP header of the original packet and of each fragment. **[10 Marks]**

c) Describe tunneling approach of transmission of IPv6 packets over IPv4 tunnel with neat diagram. **[04 Marks]**

9 **a)** Distinguish between TCP and UDP. Describe TCP connection establishment and connection termination process with neat diagram **[08Marks]**

b) Explain operation of OSPF with different stages. **[12 Marks]**

OR

10 **a)** Explain two types of DNS messages with its header format **[06 Marks]**

b) With relevant diagrams Explain local and remote log-in process. **[06 Marks]**

c) Explain different categories of WEB documents. **[08 Marks]**