Register Number															

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamil Nadu

Set - B

College of Engineering and Technology

School of Computing

Academic Year: 2021-22 (Even)

Test	: CLA-T3	**Date**	: 24-06-2022
Course Code & Title	: 18CSS202J - Computer Communications	**Duration**	: 100 Minutes (2 Periods)
Year & Sem	: II Year / IV Sem	**Max Marks**	: 50

Course Articulation Matrix:

S.No.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO1	3	-	-	-	-	-	-	-	-	-	-	3
2	CO2	3	2	3	-	-	-	-	-	-	-	-	3
3	CO3	3	3	3	-	-	-	-	-	-	-	-	3
4	CO4	3	2	-	-	-	-	-	-	-	-	-	3
5	CO5	3	-	-	-	-	-	-	-	-	-	-	2
6	CO6	3	3	3	-	-	-	-	-	-	-	-	3

Part – A (20 x 1 = 20 Marks)

Instructions: 1) Answer ALL questions. 2) The duration for answering the part A is 30 minutes (this sheet will be collected after 30 minutes). 3) Encircle the correct answer 4) # denotes the type of the question is “fill in the blank”

Q. No	Question	Marks	BL	CO	PO	PI Code
1	_____ control refers to methods of error detection and correction. A. Flow B. Error C. Transmission D. Data Control	1	1	4	1	1.7.1
2	In the sliding window method of flow control, the receiver window _____ size when an ACK is sent. A. increases in B. decreases in C. doubles in D. remains its original	1	2	4	1	1.7.1
3	A sender has a sliding window of size 15. The first 10 frames are sent. How many frames are in the window now? A. 4 B. 5 C. 6 D. 10	1	3	4	2	2.6.3
4	The _____ is the regulation of the amount of data that can be sent. A. Line discipline B. Flow control C. Error control D. Data flow	1	1	4	1	1.7.1
5#	ARQ stands for _____ Automatic repeat request	1	1	4	1	1.7.1
6	In the _____ Protocol, if no acknowledgment for a frame has arrived, we resend all outstanding frames. A. Stop-and-Wait ARQ B. Go-Back-N ARQ C. Selective-Repeat ARQ D. both A & B	1	1	4	1	1.7.1
7	In block coding, the message is divided into blocks, each of k bits, called _____ A. blockwords B. datawords C. blocks D. Data	1	2	4	2	2.6.3

8	The Hamming distance between equal codewords is _____ A. 1 B. n C. 0 D. 2	1	1	4	1	1.7.1
9	In _____ methods, no station is superior to another station and none is assigned the control over another A. random access B. controlled access C. channelization D. serial access	1	1	4	1	1.7.1
10	PPP consists of _____components A. One B. Two C. Three D. Four	1	1	4	1	1.7.1
11	In _____ forwarding, the mask and destination addresses are both 0.0.0.0 in the routing table A. next-hop B. network-specific C. host-specific D. default	1	1	6	1	1.7.1
12	A _____ routing table contains information entered manually. A. static B. dynamic C. hierarchical D. hybrid	1	1	6	1	1.7.1
13	The input and output ports of a router perform the _____ layer functions of the router. A. physical and data link B. network C. transport D. session	1	1	6	1	1.7.1
14	The Routing Information Protocol is an intradomain routing based on _____ routing. A. distance vector B. link state C. path vector D. vector	1	1	6	1	1.7.1
15	To create a neighborhood relationship, a router running BGP sends an _____ message. A. open B. update C. keep alive D. connect	1	1	6	1	1.7.1
16	Which command displays RIP routing updates? A. Show IP route B. Debug IP rip C. Show protocols D. Debug IP route	1	1	6	1	1.7.1
17	Where are EIGRP successor routes stored? A. In the routing table only B. In the neighbor table only C. In the topology table only D. In the routing table and the topology table	1	1	6	1	1.7.1
18	Which routing method best describes BGP? A. distance vector B. link-state C. path-vector D) hybrid of link-state and distance vector	1	1	6	1	1.7.1
19	Count-to-Infinity problem occurs in _____ A. distance vector routing B. short path first C. link state routing D. hierarchical routing	1	1	6	1	1.7.1
20	In OSPF header, which field is used to detect errors in the packet? A. Type B. Area ID C. Authentication type D. Checksum	1	1	6	1	1.7.1

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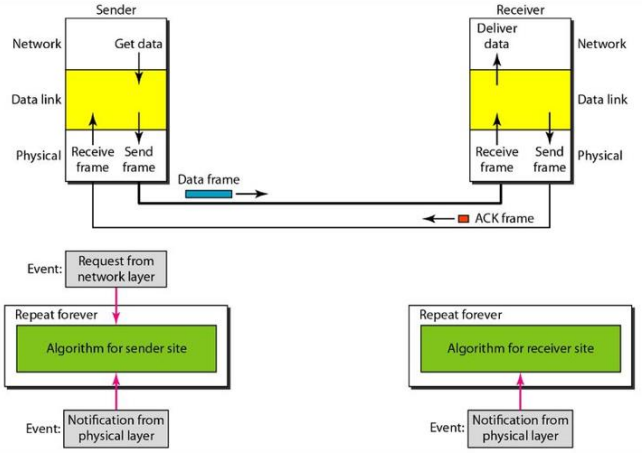
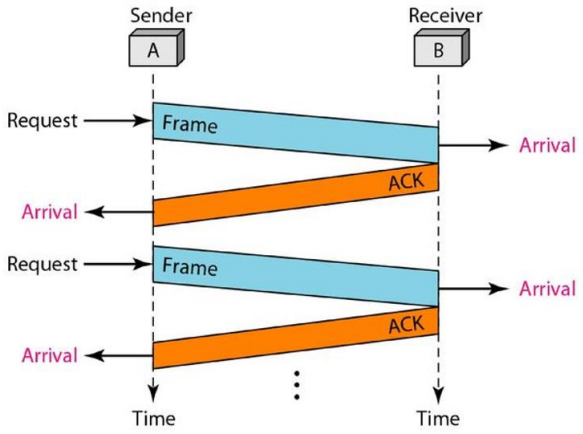
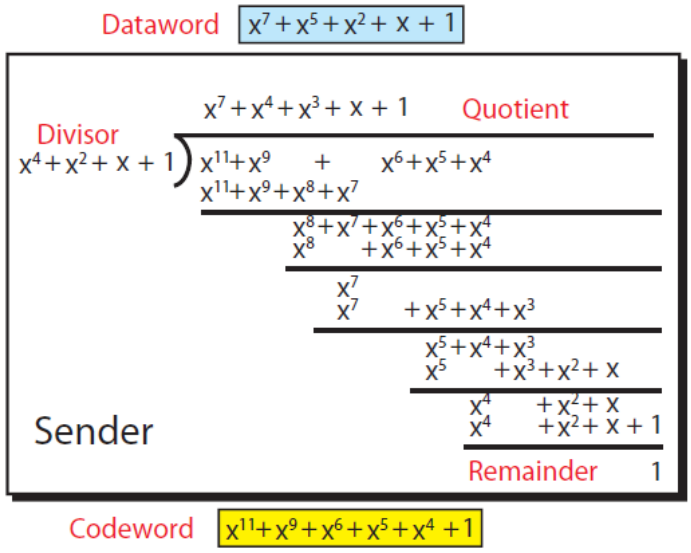
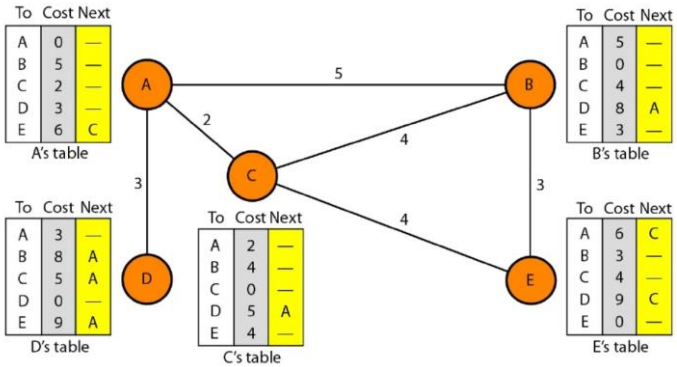
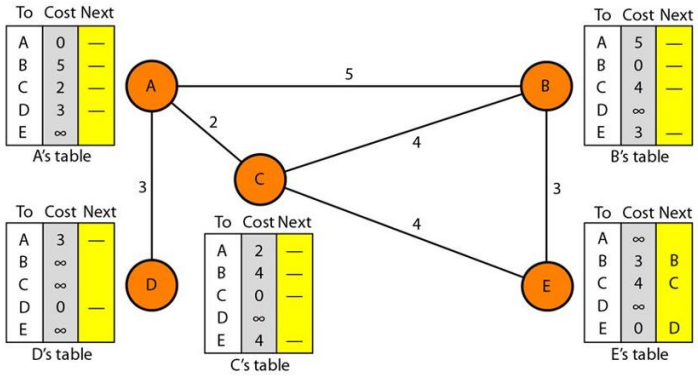
Part – B (2 x 5 = 10 Marks)

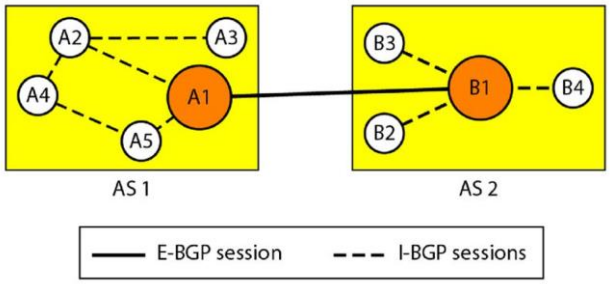
Instructions: Answer ALL questions

Q. No	Question	Marks	BL	CO	PO	PI Code
21	Compare and contrast byte-stuffing and bit-stuffing. Which technique is used in byte-oriented protocols and bit-oriented protocols? **Answer:** ✓ Character-oriented protocols use byte-stuffing to be able to carry an 8-bit pattern that is the same as the flag. ✓ Byte-stuffing adds an extra character to the data section of the frame to escape the flag-like pattern. ✓ Bit-oriented protocols use bit-stuffing to be able to carry patterns similar to the flag. ✓ Bit-stuffing adds an extra bit to the data section of the frame whenever a sequence of bits is similar to the flag.	5	2	4	1	1.7.1
22	Contrast and compare distance vector routing with link state routing. **Answer:** ✓ In distance vector routing each router sends all of its knowledge about an autonomous system to all of the routers on its neighboring networks at regular intervals. ✓ It uses a fairly simple algorithm to update the routing tables but results in a lot of unneeded network traffic. ✓ In link state routing a router floods an autonomous system with information about changes in a network only when changes occur. ✓ It uses less network resources than distance vector routing in that it sends less traffic over the network but it uses the much more complex Dijkstra Algorithm to calculate routing tables from the link state database.	5	2	6	1	1.7.1

Part – C (2 x 10 = 20 Marks) **Instructions: Answer ALL questions**						
Q. No	**Question**	**Marks**	**BL**	**CO**	**PO**	**PI Code**
23. A	Illustrate the design mechanism for Stop-and-Wait Protocol and explain in detail with example. **Answer:** ✓ In Stop-and-Wait Protocol, the sender sends one frame, stops until it receives confirmation from the receiver (okay to go ahead), and then sends the next frame. ✓ We still have unidirectional communication for data frames, but auxiliary ACK frames (simple tokens of acknowledgment) travel from the other direction.  ***Design of Stop-and- Wait Protocol*** ✓ The below figure shows an example of communication using this protocol. It is still very simple.  ✓ The sender sends one frame and waits for feedback from the receiver. ✓ When the ACK arrives, the sender sends the next frame. ✓ Note that sending two frames in the protocol involves the sender in four events and the receiver in two events	10	2	4	1	1.7.1
Or						

23. B.i.	Assuming even parity, find the parity bit for the data unit 1 0 0 0 0 0 0 	Dataword	Number of 1s	Parity	Codeword
---	---	---	---
1000000	1 (odd)	1	11000000		2	3	4	2	2.6.3
23. B.ii.	Given the dataword polynomial $x^7 + x^5 + x^2 + x + 1$ and the divisor polynomial $x^4 + x^2 + x + 1$, Show the generation of the codeword polynomial at the sender site (using binary division). **Answer:**  	8	3	4	2	2.6.3
24. A	Illustrate the working of distance vector protocol with example. **Answer:** ✓ In distance vector routing, the least-cost route between any two nodes is the route with minimum distance. ✓ In this protocol, as the name implies, each node maintains a vector (table) of minimum distances to every node. ✓ The table at each node also guides the packets to the desired node by showing the next stop in the route (next-hop routing). ✓ In the below figure, we show a system of five nodes with their corresponding tables  ✓ The table for node A shows how we can reach any node from this node. For example, our least cost to reach node E is 6. The route passes through C.	10	1	6	1	1.7.1

	✓ ***Initialization*** ✓ The tables in Figure 22.14 are stable; each node knows how to reach any other node and the cost. ✓ At the beginning, however, this is not the case. Each node can know only the distance between itself and its immediate neighbors, those directly connected to it. ✓ So, for the moment, we assume that each node can send a message to the immediate neighbors and find the distance between itself and these neighbors  ***Initialization of tables in distance vector routing*** ✓ The above figure shows the initial tables for each node. ✓ The distance for any entry that is not a neighbor is marked as infinite (unreachable). ✓ **Sharing:** The whole idea of distance vector routing is the sharing of information between neighbors. ✓ ***In distance vector routing, each node shares its routing table with its immediate neighbors periodically and when there is a change*** ✓ ***Updating:*** When a node receives a two-column table from a neighbor, it needs to update its routing table					
	Or					
24. B	Describe the Border Gateway Protocol with example. **Answer:** ✓ Border Gateway Protocol (BGP) is an interdomain routing protocol using path vector routing. It first appeared in 1989 and has gone through four versions. ✓ The Internet is divided into hierarchical domains called autonomous systems ✓ We can divide autonomous systems into three categories: stub, multihomed, and transit. ✓ ***Stub AS:*** A stub AS has only one connection to another AS. The interdomain data traffic in a stub AS can be either created or terminated in the AS. The hosts in the AS can send data traffic to another ASs. The hosts in the AS can receive data coming from hosts in another ASs. Data traffic, however, cannot pass through a stub AS. ✓ ***Multihomed AS:*** A multihomed AS has more than one connection to other ASs, but it is still only a source or sink for data traffic. It can receive data traffic from more than one AS. It can send data traffic to more than one AS, but there is no transient traffic. It does not allow data coming from one AS and going to another AS to pass through. A good example of a multihomed AS is a large corporation that is connected to more than one regional or national AS that does not allow transient traffic.	10	2	6	1	1.7.1

	✓ ***Transit AS:*** A transit AS is a multihomed AS that also allows transient traffic. Good examples of transit ASs are national and international ISPs (Internet backbones). ✓ ***Path Attributes:*** The path was presented as a list of autonomous systems, but is, in fact, a list of attributes. ✓ Each attribute gives some information about the path. The list of attributes helps the receiving router make a more-informed decision when applying its policy. ✓ Attributes are divided into two broad categories: well-known and optional. A well-known attribute is one that every BGP router must recognize. An optional attribute is one that needs not be recognized by every router. ✓ ***BGP Sessions***: The exchange of routing information between two routers using BGP takes place in a session. A session is a connection that is established between two BGP routers only for the sake of exchanging routing information. To create a reliable environment, BGP uses the services of TCP. ✓ ***External and Internal BGP:*** If we want to be precise, BGP can have two types of sessions: external BGP (E-BGP) and internal BGP (I-BGP) sessions. The E-BGP session is used to exchange information between two speaker nodes belonging to two different autonomous systems. The I-BGP session, on the other hand, is used to exchange routing information between two routers inside an autonomous system.  ***Internal and external BGP sessions*** ✓ The session established between AS1 and AS2 is an E-BOP session. The two speaker routers exchange information they know about networks in the Internet. However, these two routers need to collect information from other routers in the autonomous systems. This is done using I-BOP sessions					

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions