

VLSI

40

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7030

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – DEC.2022 / JAN. 2023

Third Semester

VLSI Design

P19VDE24 - WIRELESS ADHOC AND SENSOR NETWORKS

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What does it mean for a wireless network to be operating in “infrastructure mode?” If the network is not in infrastructure mode, what mode of operation is it in, and what is the difference between that mode of operation and infrastructure mode?	2	K3	CO1
2.	How to overcome the Hidden terminal problem in wireless Networks?	2	K3	CO1
3.	List the important features of DREAM.	2	K2	CO2
4.	What is meant by Hybrid Routing Protocol? Provide one example to it.	2	K2	CO2
5.	What are the differences between a node (station) in Ad hoc networks and sensor networks?	2	K4	CO3
6.	What is the major difference between flow control and congestion control in networks?	2	K4	CO3
7.	What is the function of Topology Control Protocols?	2	K1	CO4
8.	Enumerate the features of sensor network simulators?	2	K1	CO4
9.	List the various security issues in MANETs.	2	K2	CO5
10.	What is SPINS?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q. No.	Questions	Marks	KL	CO
11. a)	Why the wireless 802.11 MAC protocol does not implement collision detection like the 802.3 Ethernet protocol? Explain the different reasons for this.	13	K3	CO1
	(OR)			
b)	Explain the CSMA/CA protocol in detail. Discuss the MAC layer frame format for the IEEE 802.11 WLANs.	13	K2	CO1
12. a)	Explain about flooding in data delivery in MANETs with neat diagram. Mention the advantages and disadvantages of this. What is meant by flooding of control packets?	13	K2	CO2
	(OR)			
b)	Explain clearly about link addition and link break in DSDV Explain the principle of Power – Aware Routing in MANETs.	13	K2	CO2
13. a)	With a neat diagram, discuss the architecture of ZigBee protocol stack and provide the functionalities of each layer. Discuss the frame format of IEEE 802.15.4 protocol standard.	13	K3	CO3
	(OR)			
b)	Explain the Energy Efficient design principles for WSN protocols. Explain with an example the energy efficient routing in WSNs.	13	K3	CO3
14. a)	Explain the localization and its significance in WSNs. Explain with an example the triangulation method for localization in WSNs.	13	K3	CO4
	(OR)			
b)	Write Short Notes on i. Operating systems ii. Sensor Network programming iii. Sensor Network Simulators.	13	K2	CO4
15. a)	Explain the Broadcast authentication protocols TESLA and BIBA. How these protocols achieve broadcast security in wireless sensor networks?	13	K2	CO5
	(OR)			
b)	Explain Software based Anti-tamper techniques and water marking techniques to improve the network security in Ad Hoc and Sensor networks.	13	K2	CO5

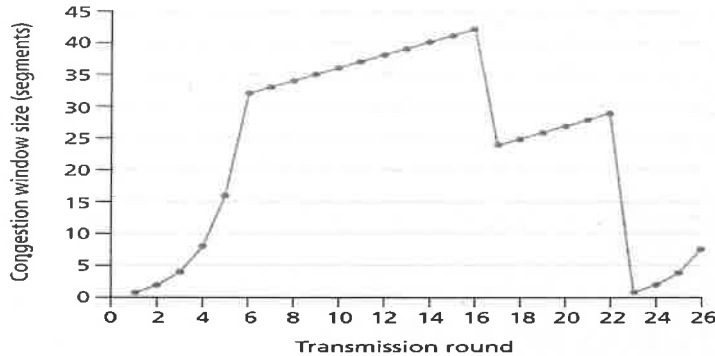
PART – C

(1 x 15 = 15 Marks)

Q.No.
16. a)

Questions

Marks 15
KL K4
CO CO3



Consider the Figure given above. Assuming TCP Reno is the protocol experiencing the behavior shown above, answer the following questions. In all cases, you should provide a short discussion justifying your answer. (Values in figure are approximate).

- i. Identify the intervals of time when TCP slow start is operating.
- ii. Identify the intervals of time when TCP congestion avoidance (Additive Increase) is operating.
- iii. After the 16th transmission round, is segment loss detected by a triple duplicate ACK or by a timeout?
- iv. After the 22nd transmission round, is segment loss detected by a triple duplicate ACK or by a timeout?
- v. What is the initial value of ssthresh (slow start threshold) at the first transmission round?
- vi. Suppose TCP Tahoe is used (instead of TCP Reno), and assume that triple duplicate ACKs are received at the 16th round. What are the ssthresh and the congestion window size at the 19th round?
- vii. Again suppose TCP Tahoe is used, and there is a timeout event at 22nd round, how many packets have been sent out from 17th round till 22nd round, inclusive?

(OR)

- b) With a neat block diagram, explain the hardware architecture of a WSN which can be used for any application (you can assume any application) to collect the sensor data. 15 K6 CO3

What are the various sensors you will use? How sensor data can be accessed through a mobile application? What are the communication protocols will be used?

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7027

M.E./ M. Tech., DEGREE END-SEMESTER EXAMINATIONS – DEC.2022 / JAN. 2023

Third Semester

VLSI Design

P19VDE19 – COMMUNICATION NETWORKS

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels	K1 – Remembering	K3 – Applying	K5 - Evaluating
(KL)	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	An Ethernet MAC sub-layer receives 1540 bytes of data from the upper layer. Compute the number of frames needed to encapsulate above data. Also determine the size of the data in each frame.	2	K3	CO1
2.	Sketch a virtual LAN and mention its merits.	2	K2	CO1
3.	List the methods that can be used to address the framing issue.	2	K1	CO2
4.	A TCP opens a connection using an Initial Sequence Number (ISN) of 14,137. The other party opens the connection with an ISN of 18,332. Sketch the three TCP segments during the connection establishment.	2	K3	CO2
5.	State the rules of non boundary-level masking.	2	K1	CO3
6.	What are the metrics used in determining the best path for routing protocol?	2	K2	CO3
7.	Sketch the weighted fair queuing technique to improve QoS at the transport layer with three flow classes.	2	K2	CO4
8.	Write short notes on resource reservation protocol.	2	K2	CO4
9.	List the various network simulations used in the industry and mention their features.	2	K2	CO5
10.	What is the role of RD And RT in MPLS L3vpn?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. Explain the various physical layer implementation of 802.3 standard Ethernet.	8	K2	CO1
	ii. Explain CSMA/CA technique with neat sketches and flowchart.	5	K2	CO1

(OR)

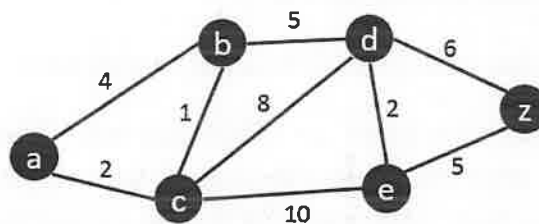
b)	i. Explain the function and significance of routers, repeaters, and gateways in the network connection.	8	K2	CO1 CO1
	ii. Outline the salient features of a virtual local area network.	5	K2	
12. a)	Analyze the performance and compatibility of the TCP variants Tahoe and Vegas in detail.	13	K4	CO2

(OR)

b)	What are the issues involved when ATM is used in LANs? Describe in detail the functions of various layers of ATM	13	K2	CO2
13. a)	Describe the characteristics and functionality of the Border Gateway Protocol (BGP) for routing.	13	K2	CO3

(OR)

b)	Consider the mesh network of Distance Vector (DV) routing algorithm for IP network. Given the source-destination pair to be (a, z), find the shortest path from node 'a' to node 'z' using Distance Vector routing algorithm.	13	K3	CO3
----	---	----	----	-----



14. a)	Brief the flow control and congestion control mechanism adopted in TCP network.	13	K2	CO4
--------	---	----	----	-----

(OR)

b)	What is the need of traffic shaping? Explain the concepts of leaky bucket and token bucket. Also state how these techniques are used in improving QOS.	13	K2	CO4
----	--	----	----	-----

15. a)	List the transition strategies to move from IPV4 to IPV6. Explain the difference between tunneling and dual stack strategies during the transition period. When is each strategy used?	13	K4	CO5
--------	--	----	----	-----

(OR)

- b) Describe Push, Swap, Pop Functions in MPLS and also explain Penultimate Hop Popping with an example. 13 K2 CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Evaluate the performance of Diffserv-enabled (Diffserv), Self Clocked-Fair (SCF), Weighted Fair Queuing (WFQ) and Weighted-Round Robin (WRR) scheduling algorithms in the WiMAX network. (OR)	15	K5	CO4
b)	The nodes in the participation network are shown in figure below. Use Dijkstra's Algorithm to build the routing data base in all nodes. Apply the steps of the Dijkstra's Algorithm to find the shortest path from 'a' to 'z'.	15	K3	CO3

