Reg. No.															

B.Tech. DEGREE EXAMINATION, DECEMBER 2023

Sixth Semester

18CSE453T – NETWORK ROUTING ALGORITHMS

(For the candidates admitted from the academic year 2020-2021 & 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours | Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. This type of router is designed to operate in the internet back bone, (A) Edge router (B) Core router (C) Enterprise router (D) Gate router	1	1	1	1
2. What is the function of router? (A) Write the source address (B) Write the destination address (C) Read the source address (D) Read the destination address	1	1	1	1
3. The size of the MAC address is (A) 32 (B) 48 (C) 64 (D) 128	1	1	1	1
4. You have a class A network address 10.0.0.0 with 40 subnets. But are required to add 60 new subnets very soon. You would like to still allow for the largest possible number of host ID per subnet. Which subnet mark would you assign? (A) 255.254.0.0 (B) 255.252.0.0 (C) 255.248.0.0 (D) 255.240.0.0	1	1	1	1
5. Find the appropriate router forwarding functions, from the statements given below: (i) IP header validation (ii) Packet life time control (iii) Checksum recalculation (iv) Route look up (A) (i) and (ii) (B) (ii), (iii) and (i) (C) (iii), (iv) and (ii) (D) (i), (ii), (iii) and (iv)	1	1	1	1
6. In a binary tries algorithm left branch of a node is labeled as (A) 0 (B) 1 (C) 2 (D) 3	1	1	2	2
7. What is the time complexity of Naive algorithm for search? (A) O (N) (B) O log (N) (C) O (1) (D) O_2 (N)	1	1	2	2

8. What is the running time of Bellman ford algorithm? 1 2 2 2

(A) O (V) (B) O (V^2)
(C) O (E) (D) O (VE)

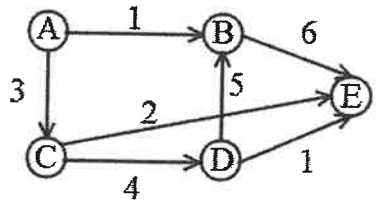
9. A graph is said to be a negative weight cycle when, _____. 1 2 3 1

(A) The graph has one negative weighted edge (B) The graph has one or more negative weighted edge
(C) The total weight of the graph is negative (D) The graph has a cycle

10. Which of the following statement is true about path vector routing? 1 2 3 1

(A) Path vector routing is similar to the link stack router (B) EGP is used in path vector
(C) Maintains the path information and gets updated dynamically (D) Not flexible in selecting the path while hiding the information

11. In the given graph identity the shortest path having minimum cost to reach vertex E, is A is the source vertex 1 1 3 1



(A) a – c – e (B) a – b – e
(C) a – c – d – e (D) a – c – d – b – e

12. Dijkstra's algorithm cannot be applied for _____. 1 1 3 1

(A) Directed and weighted graph (B) Graphs having negative weight function
(C) Unweighted graphs (D) Undirected and unweighted graphs

13. How will you select the protocol, if the network diameter is more than 18 hops? 1 1 4 1

(A) EIGRP (B) OSPF
(C) RIPV1 (D) RIPV2

14. The specific examples of interior gateway protocols are (is) 1 2 4 1

(i) Open shortest path first
(ii) Routing information protocol
(iii) Border gateway protocol
(iv) Intermediate system to intermediate system

(A) (i) and (ii) (B) (i), (iii) and (iv)
(C) (ii) and (iv) (D) (i), (ii) and (iv)

15. Which type of OSPF network will elect a backup designed router? 1 2 4 2

(i) Point to point (ii) Broadcast multipoint
(iii) Broad cast multi access (iv) Non-Broadcast multi-access

(A) (i) and (ii) (B) (iii) and (iv)
(C) (ii) and (iii) (D) (i) and (iv)

16. IGRP packet is fairly compact consisting of _____ header field. 1 1 4 7

(A) 12-bytes (B) 14-bytes
(C) 16-bytes (D) 18-bytes

17. From the given options identify the protocol, which is free from loops, deadlocks and packet duplicates. 1 2 5 2

(A) Distance vector protocols (B) Associativity based routing
(C) Dynamic source routing (D) Ad-hoc on demand distance vector routing

18. Which is not suitable based on classification in prediction in temporal information for routing protocols adhoc networks? 1 2 5 2

(A) DSDV (B) LBR
(C) GSR (D) AODL

19. The source tree adaptive routing protocol (STAR) aims for _____. 1 2 5 2

(A) Maximize control overhead irrespective of the routes (B) Delay in the route setup can be minimized
(C) Providing optimal router irrespective of the control overhead (D) No route updates

20. The major difference between AODV (Adhoc-on-Demand vector routing protocol) and DSR (Dynamic source routing protocol) are, _____ 1 2 5 2

(A) Send the messages about preferred destination (B) Provides the optimal routes
(C) In DSR a data packet carries the complete path to the traversed (D) Identifies the costs of paths

PART – B (5 × 4 = 20 Marks) Marks BL CO PO

Answer **ANY FIVE** Questions

21. Mention the key factors for the efficient delivery of packets. 4 1 1 1

22. For the IP address 10.15.20.62, identify the class, network IP address. Direct broadcast address and limited broadcast address. 4 2 1 1

23. Do the comparison of routing table and forwarding table. 4 1 2 1

24. Briefly explain binary tries algorithm with example. 4 1 2 1

25. Justify with example, the Bellman-Ford algorithm, cannot handle distributed environment, why? 4 2 3 1

26. Write any five points for similarities and differences between IS-IS and OSPF routing protocols. 4 1 4 1

27. What are the characteristics of adhoc environment? 4 1 5 1

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Elaborate the architectural facts of networking. Discuss three service models associated with IP networks.	12	1	1	1
	(OR)				
b.	Explain protocol stack architecture with their functions, components and protocols.	12	1	1	1
29. a.	Write in detail about the classification of router architecture based on CPU architecture. State the bottleneck identified in each classification.	12	1	2	1
	(OR)				
b.	How to insert new node in binary tries? Explain with diagram.	12	1	2	1
30. a.	Explain about distance vector routing and at which situation you will use split-horizon technique.	12	2	3	1
	(OR)				
b.	Explain the routing protocols with necessary diagrams (i) RIPV1 (ii) EIGRP	12	1	3	1
31. a.	Briefly explain about destination distance vector routing protocol with example.	12	1	4	1
	(OR)				
b.	Explain how Open Shortest Path First (OSPF) protocol, is designed to address different types of network.	12	1	4	1
32. a.	Explain the following reactive routing protocols with example (i) Dynamic source routing protocol (ii) Location aided routing	12	1	5	1
	(OR)				
b.	What are metrics can be taken into account on route selection procedures in power aware routing protocols.	12	2	5	1

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