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**B.Tech/ M.Tech (Integrated) DEGREE EXAMINATION, MAY 2024**  
Fifth Semester

**21CSC302J – COMPUTER NETWORKS**

*(For the candidates admitted from the academic year 2022-2023 onwards)*

**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 40<sup>th</sup> minute.
- (ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours

Max. Marks: 75

**PART – A (20 × 1 = 20Marks)**

Marks    BL    CO

Answer **ALL** Questions

- |  |   |   |   |
|--|---|---|---|
| 1. LAN interconnects hosts; a WAN interconnects connecting _____<br>(A) Networking devices                      (B) LANs<br>(C) PCs    (D) PANs  | 1 | 1 | 1 |
| 2. A _____ is always available between the two end systems which becomes active or inactive based on the switch<br>(A) Packet switched network.              (B) point-to-point WANs<br>(C) circuit-switched network                (D) Networking devices | 1 | 1 | 1 |
| 3. The process-to-process delivery of the entire message is the responsibility of the _____ layer.<br>(A) Network                                      (B) Transport<br>(C) Application                                  (D) Physical                      |   |   |   |
| 4. Which of the following primarily uses guided media?<br>(A) Cellular telephone system              (B) Local telephone system<br>(C) Satellite communication                (D) Radio Broadcasting   | 1 | 1 | 1 |
| 5. _____ is the multiport repeater.<br>(A) Hub    (B) Bridge<br>(C) Switch    (D) Router   | 1 | 2 | 2 |
| 6. Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224 what is the subnet address?<br>(A) 201.14.78.32                                (B) 201.14.78.65<br>(C) 201.14.78.64                                (D) 201.14.78.12               | 1 | 2 | 2 |
| 7. Class _____ has the greatest number of hosts per given network address<br>(A) A    (B) B<br>(C) C    (D) D  | 1 | 2 | 2 |
| 8. On a network that uses NAT (Network Address Translation), the _____ has translation table.<br>(A) Switch    (B) Bridge<br>(C) Server    (D) Router                          | 1 | 1 | 2 |

9. In distance vector routing each router receives information directly from \_\_\_\_\_ . 1 1 3  
 (A) Every router on the network (B) Every router less than two units away  
 (C) A table stored by the network (D) Its neighbours only hosts
10. Router B receives an update from router A that indicates Net1 is two hops away. The next update from A says Net1 is five hops away. What value is entered in B's routing table for Net1? Assume the basic RIP is being used 1 2 3  
 (A) 2 (B) 3  
 (C) 6 (D) 7
11. Dijkstra's algorithm is used to \_\_\_\_\_ . 1 1 3  
 (A) Create LSAs (B) Flood an internet with information  
 (C) Calculate the routing tables (D) Create a link state database
12. \_\_\_\_\_ is not a multicasting application 1 2 3  
 (A) Teleconferencing (B) Distance learning  
 (C) Information dissemination (D) Train announcements
13. In the \_\_\_\_\_ Random access method, there is no collision 1 1 4  
 (A) Aloha (B) Csmaca  
 (C) Csmacd (D) Token passing
14. Flow control is needed to prevent \_\_\_\_\_. 1 1 4  
 (A) Bit errors (B) Overflow of the sender buffer  
 (C) Overflow of the receiver buffer (D) Collision between sender and receiver
15. For a sliding window of size  $n-1$  ( $n$  sequence numbers), there can be maximum of \_\_\_\_\_ frames sent but unacknowledged 1 1 4  
 (A) 0 (B)  $n-1$   
 (C)  $n$  (D)  $n+1$
16. HDLC is an acronym for \_\_\_\_\_. 1 1 4  
 (A) High-duplex line communication (B) High-level data link control  
 (C) Half-duplex digital link (D) Host double-level circuit combination
17. UDP needs the \_\_\_\_\_ address to deliver the user datagram to the correct application program 1 1 5  
 (A) Application (B) Max  
 (C) IP (D) Port
18. The \_\_\_\_\_ defines the server program 1 1 5  
 (A) Ephemeral Port number (B) IP Address  
 (C) Well known port number (D) MAC address

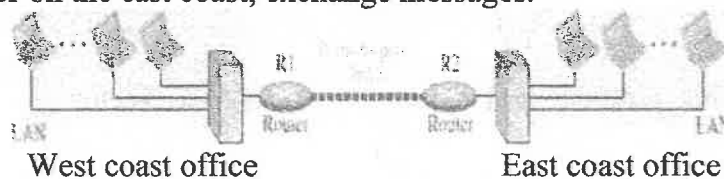
19. To prevent silly window syndrome created by a receiver that processes data at a very slow rate \_\_\_\_\_ can be used  
 (A) Clark's solution (B) Nagle's algorithm  
 (C) Delayed acknowledgement (D) Zero timer
20. The host with the domain name srm.sco.ktr.univ is on the \_\_\_\_\_ level of the DNS hierarchical tree (The root is level 1)  
 (A) 4<sup>th</sup> (B) 5<sup>th</sup>  
 (C) 6<sup>th</sup> (D) 7<sup>th</sup>

**PART – B (5 × 8 = 40 Marks)**

Marks BL CO

Answer ALL Questions

21. a. Using the internet in Figure shown, show the layers of the TCP/IP protocol suite and the flow of data when two hosts, one on the west coast and the other on the east coast, exchange messages.



(OR)

- b.i. Why does a circuit-switched network need end-to-end addressing during the setup and teardown phases? Why are no addresses needed during the data transfer phase for this type of network?
- ii. Why does a packet switching network need only end-to-end addressing during the data transfer phase, but no addressing during the setup and teardown phases?
22. a. In contemporary routing and addressing, the notation commonly used is called classless interdomain routing or CIDR. With CIDR, the number of bits in the mask is indicated in the following fashion: 192.168.100.0/24. This corresponds to a mask of 255.255.255.0. If this example would provide for 256 host addresses on the network, how many addresses are provided with the following?  
 (i) 192.168.100.0/23  
 (ii) 192.168.100.0/25

(OR)

- b. A switch uses a filtering table; a router uses a routing table. Can you explain the difference considering their functionalities and features?
23. a. Brief about the process of classful and classless subnetting with examples.
- (OR)
- b. Explain the EIGRP Protocol with required diagrams.
24. a. List some strategies in CSMA/CA that are used to avoid collision.

(OR)

- b. Explain Error Detection strategies in Data Link Layer.

25. a. Compare the working of TCP and UDP.

8 1 5

(OR)

b. Write about Application layer protocols : HTTP and DNS.

8 1 5

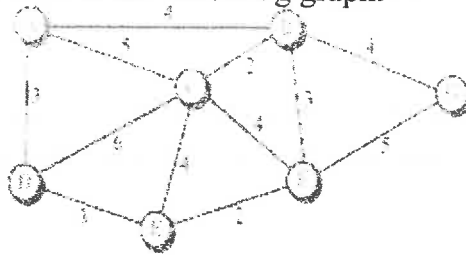
**PART – C (1 × 15 = 15 Marks)**

Marks BL CO

Answer ANY ONE Question

26. Use Dijkstra's algorithm to find the shortest path tree and the forwarding table for node A in the following graph.

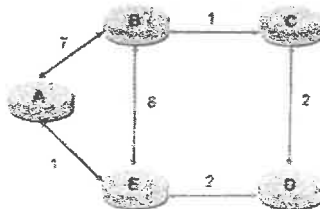
15 1 3



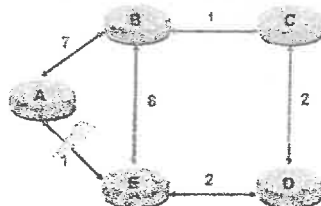
Write the advantages of this protocol in comparison to distance vector routing.

27. Find the final convergence table for the following network using Bellman-ford algorithm.

15 1 3



Assume the link between A and E is broken as shown below. Explain the count to infinity problem that occurs due this broken link and also prove split horizon with poison reverse is the solution.



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