

Roll NO. _____

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Examination: Backlog/ Supplementary Examination 2024-25

Paper Name: Data Communication and Computer Networks Basics Paper Code: BCA-202/B.Sc.-202
Time: 2.5 Hours (2 Hours 30 minutes) Maximum Marks: 60

Follow proper numbering for answering the questions.

SECTION: A (20 Marks)

All questions are compulsory

(20x1=20)

Q. Nos	Questions	Marks	CO	BL
1.	Which network type typically uses a shared medium such as Ethernet for communication between devices within a limited geographical area? (a) WAN (b) MAN (c) LAN (d) Internet	1	CO1	L2
2.	Which of the following is a key characteristic of a mesh topology? (a) Simple to install and maintain. (b) High cost due to numerous connections. (c) Low fault tolerance. (d) Limited scalability.	1	CO1	L2
3.	Transmission data rate is decided by which layer? (a) Network Layer (b) Physical Layer (c) Transport Layer (d) none	1	CO1	L2
4.	Why are parity bits used? (a) Bit Stuffing (b) Encryption (c) Error Detection (d) none	1	CO4	L2
5.	Which address is the loopback address? (a) 126.0.0.0 (b) 1.0.0.1 (c) 127.0.0.1 (d) 255.255.255.255	1	CO2	L2
6.	The divisor in CRC is normally called (a) Generator (b) Degree (c) CRC (d) none	1	CO3	L1
7.	Which type of DNS record holds the IPv4 IP address for a hostname? (a) The CName record (b) The PTR record (c) The A record (d) The AAAA record	1	CO4	L1
8.	Identify the protocol primarily used for browsing data (a) HTML (b) SGML (c) FTP (d) HTTP	1	CO1	L1
9.	The local host and remote host are defined using IP addresses. To define process we need second identifier called _____. (a) Port Addresses (b) UDP Addresses (c) Transport addresses (d) None	1	CO1	L1
10.	Which of the following networking technologies establishes a dedicated path between the source and destination before data transmission begins? (a) Virtual Circuit Switching (b) Packet Switching (c) Circuit Switching (d) Datagram Switching	1	CO1	L2
11.	Which multiplexing technique used to transmit digital signals? (a) FDM & WDM (b) FDM (c) TDM (d) WDM	1	CO1	L1

12.	Unipolar encoding uses: (a) Positive and negative voltage levels (b) Only positive voltage levels (c) Only negative voltage levels (d) None of the above	1	CO2	L1
13.	What is the primary function of a routing table in a router? (a) To store MAC addresses of neighboring devices. (b) To determine the next hop for packets destined for different networks. (c) To manage the flow of traffic within a single network segment. (d) To implement network address translation (NAT).	1	CO3	L2
14.	Which ARQ protocol retransmits only the lost or damaged frames, leading to higher efficiency compared to Go-Back-N? (a) Stop-and-Wait (b) Go-Back-N (c) Selective Repeat (d) Piggybacking	1	CO2	L2
15.	What is the length of the IPv4 address? (a) 16 bits (b) 64 bits (c) 32 bits (d) None	1	CO2	L1
16.	True or False: Quantization noise can be reduced by decreasing the number of levels.	1	CO3	L2
17.	True or False: Non-adaptive routing algorithms are also referred to as static routing algorithms.	1	CO3	L5
18.	True or False: UDP is a connection oriented protocol.	1	CO5	L2
19.	True or False: The Transport layer is responsible for process to process delivery	1	CO2	L2
20.	True or False: FTP is used for sending email.	1	CO4	L2

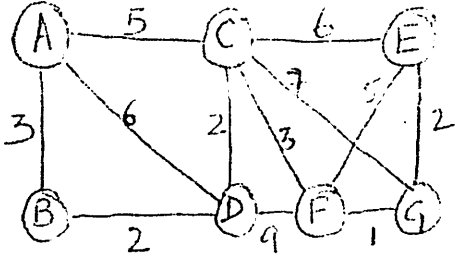
SECTION-B (20 marks)

Note: Attempt any FOUR questions. Each question carries 5 marks.

Q.No.	Questions	Marks	CO	BL
1.	How TCP connections are established and terminated?	5	CO1	L3
2.	Compare and contrast Packet Switching and Circuit Switching, highlighting their key characteristics, advantages, and disadvantages.	5	CO2	L4
3.	What is pulse code modulation? Draw the block diagram to show the PCM process.	5	CO3	L3
4.	What is the need of ARQ? Differentiate between Selective-repeat and Go-back-N ARQ.	5	CO4	L4
5.	What is routing? Differentiate between adaptive and non-adaptive routing.	5	CO4	L3
6.	Given a 10-bit sequence 1010011010 and a divisor of 1101, find the CRC.	5	CO1	L3

SECTION-C (20 marks)

Note: Attempt any TWO questions. Each question carries 10 marks.

Q.No.	Questions	Marks	CO	BL
1.	(i) Find shortest path from A to G. Show intermediate steps following the Dijkstra Algorithm  (ii) Suppose a header consists of four 8-bit words (10110011, 10101011, 01011010, 11010101). Find the Internet checksum for this code.	6 4	CO4	L4
2.	Describe the OSI (Open Systems Interconnection) network model. Explain the functions of each layer and provide examples of major protocols associated with each layer.	10	CO1	L4
3.	Explain how the Domain Name System (DNS) translates a domain name into an IP address. What are the key components involved in this process?	10	CO5	L4
4.	Write short notes on any TWO: (a) HTTP and WWW (c) IP Addressing (b) Star vs Ring Topology (d) TCP/IP Protocol Stack	10	CO5	L3

BL – Blooms Taxonomy Levels (1 – Remembering, 2 – Understanding, 3 - Applying, 4 – Analyzing, 5 – Evaluating, 6 – Creating)