NARULA INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT

B. Tech/CSE/EVEN/6th SEM/R_18/ CS601/2022-2023

YEAR: 2023

COMPUTER NETWORK
CS601

TIME ALLOTTED: 3 HOURS FULL MARKS: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A
(Multiple Choice Type Questions)

1. Answer any ***ten*** from the following, choosing the correct alternative of each question: **10×1=10**

SL	Question	Marks	Co	Blooms Taxonomy Level
(i)	Which protocol does Ping use? a) TCP b) ARP c) ICMP d)BootP	1	3	1,2,3
(ii)	Which detection method can detect a single bit error? a) Simple parity check b) 2-D parity check c) CRC d) all of these	1	2	1,2,3
(iii)	The topology with highest reliability is? a) Bus topology b) Star topology c) Ring Topology d) Mesh Topology	1	1	1,2,3
(iv)	Which of the following devices takes data sent from one network device and forwards it to all devices on the network regardless of the intended recipient? a) DNS Server b) Switch c) Hub d) Gateway	1	1	1,2,3
(v)	Which class of IP address provides a maximum of only 254 host addresses per network ID? a) Class A b) Class B c) Class C d) Class D	1	3	1,2,3
(vi)	Which of the following is an interior routing protocol? a) RIP b) OSPF c) BGP d)Both a and b	1	3	1,2,3
(vii)	The hamming code is a method of a) Error detection b) Error correction	1	2	1,2,3

c) Error encapsulation d) both (a) and (b)

(viii)	All the packets in a message follow the same path in a) Datagram packet switching b)Virtual circuit packet switching c) Message switching d)None of these	1	2	1,2,3
(ix)	Which layer is responsible for port-to-port delivery of packets? a) Transport layer b) Data link layer c) Physical layer d) Network layer	1	4	1,2,3
(x)	A firewall is a) Used to protect the computer network and restricts illicit traffic b) A form of virus c) A screen saver program d) None of these	1	5	1,2,3
(xi)	Link control protocol and Network control protocol is a feature of a) Peer-to-Peer protocol b) Point-to-Point protocol c) MAC Protocol d)HDLC protocol	1	2	1,2,3
(xii)	The length of address field in IPv6 is a) 64 bits b)128 bits c)48 bits d)256 bits	1	3	1,2,3

GROUP – B
(Short Answer Type Questions) (Answer any three of the following) 3 x 5 =15

SL	Question	Marks	Co	Blooms Taxonomy Level
2.	Compare between Pure ALOHA and Slotted ALOHA mechanisms.	5	2	1,2,3
3.	Explain 3-way TCP handshaking process.	5	4	1,2,3
4.	Explain ARP packet format with suitable diagram.	5	3	1,2,3
5.	Generate the CRC code for the data word of 1010011110. The divisor is 1011.	5	2	1,2,3,4
6.	Explain leaky bucket algorithm.	5	4	1,2,3

GROUP – C
(Long Answer Type Questions)
(Answer any three of the following) 3 x 15 = 45

	SL	Question	Marks	Co	Blooms Taxonomy Level
7.	(i)	An ISP is granted a large block of address starting with 190.100.0.0\16. ISP needs to distribute it for three group customers as follows. I. 1 st group has 64 customers: each need 256 IP addresses. II. 2 nd group has 128 customers: each need 128 addresses. III. 3 rd group has 128 customers: each need 64 addresses. Design the sub-blocks and give the slash notation for each sub-block.	8	3	1,2,3,4
	(ii)	Compare between IPV4 and IPV6.	4	3	1,2,3
	(iii)	Explain the limitation of IPV4.	3	3	1,2,3
8.	(i)	Discuss the concept of public and private cryptography.	5	5	1,2,3
	(ii)	Explain RSA algorithm with a suitable example.	5	5	1,2,3
	(iii)	Discuss the concept of public and private IP address.	5	5	1,2,3
9.	(i)	Compare between TCP and UDP.	5	4	1,2,3
	(ii)	Explain TCP header structure in details.	5	4	1,2,3
	(iii)	Explain the functionalities of Bridges in computer network.	5	2	1,2,3
10.	(i)	Explain Ethernet frame format with proper diagram.	5	2	1,2,3
	(ii)	Discuss the concept of Unicasting, Anycasting, Multicasting, and Broadcasting.	5	1	1,2,3
	(iii)	Discuss the concept of network topology and list down the different types of topologies with proper diagram.	1+4	1	1,2,3
11.	(i)	Explain the reason of using flow control mechanisms.	3	2	1,2,3
	(ii)	Explain the concept of sliding window protocol.	3	2	1,2,3
	(iii)	Discuss the problems in Go-Back-N flow control mechanism and its solutions.	5+4	2	1,2,3
12.		Write short notes on (Any three)			
	(i)	Socket	5	5	1,2,3
	(ii)	DNS	5	5	1,2,3
	(iii)	Ring and Star topology	5	1	1,2,3

(iv)	WWW	5	5	1,2,3
(v)	FTP	5	5	1,2,3
(vi)	Wireless LAN	5	2	1,2,3