

GURU NANAK INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT
2021
COMPUTER NETWORK
CS601

TIME ALLOTTED: 3HR

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

	Marks	CO No.
1 (i) The _____ layer is responsible for moving frames from one node to the next. a) Physical layer b) Datalink layer c) Network layer d) Transport layer	1	CO1
(ii) IPv6 has _____ bit addresses. a) 16 b) 128 c) 64 d) 32	1	CO4
(iii) Which transmission medium has the highest speed in a network a) Coaxial cable b) Twisted pair cable c) Optical fiber d) Electrical cable	1	CO1
(iv) Total no of flag bits in a TCP header is a) 4 b) 6 c) 3 d) 8	1	CO3
(v) If subnet mask is 255.255.192.0, then how many subnets are available? a) 2 b) 18 c) 4 d) 24	1	CO3
(vi) Connection establishment in TCP involves aHands shake. a) One-way b) Two-way c) Three-way d) None of the above	1	CO3

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|--------|---|---|-----|
| (vii) | Fiber optic cable works on
a) Polarization of light
b) Refraction of light
c) Total internal reflection of light
d) None of the above | 1 | CO1 |
| (viii) | Length of a port address-
a) 32 bits
b) 64 bits
c) 128 bits
d) 16 bits | 1 | CO4 |
| (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 | CO4 |
| (x) | The total number of links required to connect n devices using Mesh Topology is
a) 2^n
b) $n(n+1)/2$
c) $n(n-1)/2$
d) 2 | 1 | CO1 |
| (xi) | Which of the following is an application layerservice?
a) FTP
b) Remote Login
c) Mailservice
d) All of these | 1 | CO5 |
| (xii) | Which one is connectionless
a) TCP
b) UDP
c) Both TCP and UDP
d) Neither TCP nor UDP | 1 | CO3 |

GROUP – B

(Short Answer Type Questions)

(Answer any *three* of the following)

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|---|-------------------|--------------|
| | 3 x 5 = 15 | |
| | Marks | CO No |
| 2. What is congestion? Explain token bucket algorithm for congestion control. | 5 | CO4 |
| 3. Explain PAN, LAN, MAN, and WAN with example. | 5 | CO1 |
| 4.(a) Differentiate between bit error and burst error with example. | 3 | CO2 |
| (b) Differentiate between Pure Aloha and Slotted Aloha. | 2 | CO2 |
| 5.(a) Generate the CRC code for the data word of 1010011110. The divisor is 1011 | 3 | CO2 |
| (b) Write the name of the working layer(s) for the following devices-
Hub, Switch, Router and Gateway. | 2 | CO3 |

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|-------|---|---|-----|
| 6.(a) | For a Class C sub netting subnet Mask is 255.255.255.192
How many sub- nets are there? | 2 | CO4 |
| (b) | IP address 172.38.15.12. Write class, Net id and subnet mask of this IP. | 3 | CO4 |

GROUP – C

(Long Answer Type Questions)

(Answer any *three* of the following) **3 x 15 = 45**

		Marks	CO No
7. (a)	Define the basic components used for data communications and explain different data flow techniques with example.	5	CO1
(b)	Explain different types of digital to analog modulation process in detail.	5	CO1
(c)	What is the use of multiplexing in communication? Explain different types of multiplexing.	5	CO1
8. (a)	Explain Hamming code in error detection and correction system with a suitable example.	5	CO2
(b)	Explain the mode of data transfer in HDLC. Discuss the HDLC frame with diagram.	5	CO2
(c)	Explain duplicate packet problem in stop and wait flow control. How could we solve this problem?	5	CO2
9. (a)	What are the differences between TCP and UDP?	4	CO3
(b)	Explain TCP header structure in details.	7	CO3
(c)	What are 1-persistence, non-persistence and p-persistence strategies? What is vulnerable time?	4	CO3
10.	In an organization given Net Id 192.138.15.0. Now we have to	8	CO4
(a)	create four subnets. Calculate no of usable host for each subnet, subnet id, broadcast address and subnet masking for each subnet.		
(b)	Explain Distance Vector Routing with a suitable example.	4	CO4
(c)	Briefly discuss the Token Bucket algorithm.	3	CO4
11.	Write short notes (any three)	3x5=15	
(a)	Network Topology	5	CO1
(b)	Transmission Impairment	5	CO1
(c)	Packet Switching	5	CO3
(d)	CSMA/CD Vs CSMA/CA	5	CO3
(e)	WWW	5	CO4