K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)
Semester: **August – November 2020**
In-Semester Examination

Class: TY B. Tech
Branch: Computer **Semester: V**
Full name of the course: Computer Networks **Course Code: 2UCC502**
Duration: 1hr.15 min (attempting questions) +15 min (uploading) Max. Marks: 30

Q. No	Questions	Marks
Q1	1. If N is a maximum sequence number in the sliding window of Go-Back-N ARQ. How many sequence bits will be there for use? a. $\log_2 N$ b. $1/\log_2 N$ c. $\log_2 N^2$ d. $\log_2 N+1$ 2. If window size is 15, the sequence number of frames in Selective repeat ARQ is range: a. 0 to 28 b. 1 to 28 c. 0 to 29 d. 0 to 15 3. Which of the following internetworking device uses the greatest number of layers in the OSI model? a. Bridge b. Router c. Gateway d. Switch 4. How does CSMA/CD react to collisions? a. All systems jam the network, and then all begin transmitting again. b. Hosts involved in a collision send a RTS signal indicating a time frame in which to retransmit. c. Collisions do not occur on CSMA/CD. d. Hosts involved in the collision send a jamming signal, and then run an algorithm before retransmitting. 5. Given the address 192.168.10.19/28, which of the following are valid host addresses on this subnet? A. 192.168.10.29 B. 192.168.10.16 C. 192.168.10.17	10 marks (1 MARK EACH)

D. 192.168.10.31

a. Only A and C
b. Only A and D
c. Only B and C
d. Only A, B and D

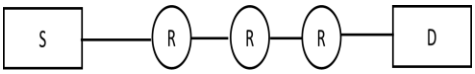
6. In a fully connected mesh network with 6 devices, there are _____ physical channels to link all devices.
   a. 10
   b. 15
   c. 16
   d. 12

7. An organisation has a class B network and wishes to form subnets for 64 departments. The subnet mask would be

   a. 255.255.240.0
   b. 255.255.64.0
   c. 255.255.248.0
   d. 255.255.252.0

8. How many number of parity bits are required in hamming code if message size is 20 bits?
   a. 4
   b. 5
   c. 6
   d. 7

9. Assume that source S and destination D are connected through three intermediate routers labelled R.



   Determine how many times each packet has to visit the network layer and the data link layer during a transmission from S to D.

   a. Network layer — 5 times and Data link layer — 5 times
   b. Network layer — 5 times and Data link layer — 4 times
   c. Network layer — 5 times and Data link layer — 8 times
   d. Network layer — 8 times and Data link layer — 8 times

10. Which of the following is not associated with the session layer?
    a. Dialog control
    b. Token management
    c. Semantics of information transmitted
    d. Synchronisation

Q2	a. Given a dataword 1010011010 and divisor 10111. Show the generation of 14 bit CRC codeword at the sender site using binary division. b. An Ethernet address is 1A:3B:4C:6D:2E:1F; what is the type of this address (unicast/multicast/broadcast)? How does this address appear on the line in binary? **OR** a. Explain Cumulative ACK scenario in Go-Back-N with the help of a neat diagram. b. Explain Two neighboring nodes (A and B) use a sliding-window protocol with a 3-bit sequence number. As the ARQ mechanism, go-back-N is used with a window size of 4. Assuming A is transmitting and B is receiving, show the window positions for the following succession of events: i. Before A sends any frames ii. After A sends frames 0, 1, 2 and receives acknowledgment from B for 0 and 1 iii. After A sends frames 3, 4, and 5 and B acknowledges 4 and the ACK is received by A	5 Marks 5 marks 5 Marks 5 marks
Q3	An organization uses 125 networked computers in its corporate office for day to day functioning. One of the computers in the organization has an IP address 172.17.14.15/25. The organization is planning to expand its operations for which it needs 100 additional computers to be added in the network. Calculate the new subnet mask for the network along with the first and last IP address of this network.	10 marks

Details for your reference

RE (Remember), UN (Understand), AP (Apply), AN (Analysis), EV (Evaluate) and CR (Create)