B.S. 4 Years Program

Paper: Computer Networks (CMP) Time: 2 Hrs. 40 Min.
Course Code: IT-309 Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2 Answer the following short questions. [5x2=10]

i. Why does a digital signal have infinite bandwidth? [2]

ii. How is self-synchronization achieved in the transmission of digital signals? [2]

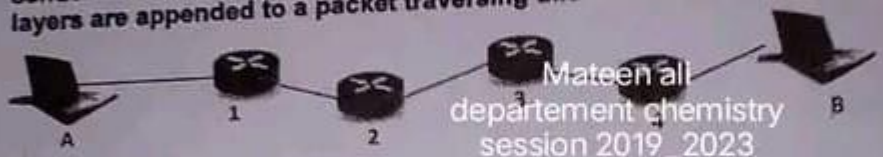
iii. Name and describe two protocols working at the application layer of the TCP/IP Model. [2]

iv. Why does distortion occur in signals? [2]

v. Differentiate between a point-to-point WAN and switched WAN. [2]

Q.3 What is NAT? How is it used to counter address exhaustion? [5]

Q.4 Consider the following network with 4 nodes (routers) labeled 1-4 connecting sender host A and receiver host B. How many headers of each of the following layers are appended to a packet traversing this network from A to B? [2+2+2]



a. Network Layer

b. Data link Layer

c. Transport Layer

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Q.5 Given the dataword 1011011011 and the divisor 10101,
a. Show the generation of codeword at the sender site (using binary division)
b. Show the checking of the codeword at the receiver site (assume 2 least significant bits have been corrupted) [5+5]

Q.6 What is the Total Delay for a frame of size 5 million bits that is being sent on a link with the following physical characteristics? [10]

a. 5 Mbps Bandwidth
b. 2000 Km long
c. 2.4 X108m/s propagation speed
d. Has 10 routers, each with the queuing time of 2μs and processing time of 1 μs.

Which component of the total delay is dominant and which is negligible?

Q.7 Suppose you wish to transmit your student ID number over some form of wired medium. First you will need to convert your student ID from its decimal representation into binary representation. Let the student ID be 156. Using clearly labeled diagrams, show an encoding of your student ID using,

a. an NRZ-I signal [3]

b. a Manchester signal [3]

c. a bipolar-AMI signal [3]

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B.S. 4 Years Program / Sixth Semester – Spring 2022 Course Code: IT-309

Roll No. .....

Time: 3 Hrs. Marks: 60

Paper: Computer Networks (CMP)

THE ANSWERS MUST BE ATTEMPTED ON THE ANSWER SHEET PROVIDED

Q.1. Answer the following short questions. (6x5=30)

I. Explain the four fundamental characteristics of an effective communication.
II. Explain the five components of data communication system.
III. What is Internet, explain the Nuts-and-Bolts of Internet?
IV. Explain the malicious code Trojan Horse, Virus, and Worms?
V. Explain the DOS attacks and counter measures?

Answer the following questions.

Question No.2: **(10 Marks)**

a) Explain the Delay, Loss, and Throughput in Packet-Switched Networks
b) Explain the private range of IP addresses.

Question No.3: **(10 x 2 = 20 Marks)**

a) Explain the Internet protocol stack and OSI reference model?
b) Explain the firewall for secure network communication.

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B.S. 4 Years Program / Sixth Semester – 2019

Paper: Computer Networks (CMP)
Course Code: IT-309 Part – I (Compulsory) **Time: 15 Min. Marks: 10**

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Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.
Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct choice. **(1x10=10)**

1. In the OSI model, what is the main function of the data link layer?
   a) node-to-node delivery b) process-to-process message delivery
   c) synchronization d) hop to hop delivery

2. which Topology require most extensive cabling
   a) Star b) Bus
   c) Mesh d) none

3. What is the size of Port address_____
   a) 16 bits b) 32 bits
   c) 48 bits d) 64 bits

4. Which multiplexing technique transmit Digital signal.
   a)FDM b)TDM
   c)WDM d)None of above

5. A Go-back-N ARQ uses a window of size 15, how many bits are needed to define the sequence number
   a) 16 b) 5
   c) 4 d) none

6. A stream of packets from a source to a destination is called data _____
   a) congestion b) flow
   c) process d) none

7. When data and acknowledgement are sent on the same frame ,this is called _____
   a)Back packing b) Piggybacking
   c)Piggypacking d) A good idea

8. In an optical fiber, the inner core is --------than cladding
   a)More dense b)Less dense
   c)Equally dense d)None of above

9. What is the data rate of Fast Ethernet?
   a)100Mbps b)10Mbps
   c)1000Mbps d)None of above

10. A periodic signal has a frequency of 10 MHz , what is the time period?
    a)0.01micro sec b) 0.1micro sec
    c) 0.10milli sec d) none

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B.S. 4 Years Program / Sixth Semester – 2019

Roll No. .....

Paper: Computer Networks (CMP)
Course Code: IT-309 Part – II

Time: 2 Hrs. 45 Min. Marks: 50

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Question No 2: Give the short answers of the following Questions? **[2x10=20]**

1. What will be the phase shift in degrees corresponding to ¾ cycle delays?
2. Calculate the bit rate for the baud rate of 1000 baud under 8-PSK modulation?
3. How many Bytes will be in the Pad field of an ethernet frame if Data is of 20 bytes?
4. Determine the level of sensitivity ('High' or 'Low') of each application in the following table for given parameters.

Application	Reliability	Delay	Jitter	Bandwidth
Text Chat				
Online Gaming				

5. Using a 5 bit sequence number, what is the maximum size of the send and receive windows for each of the following protocol:
   i. Go-Back-N ARQ
   ii. Selective Repeat ARQ
6. Which of the medium access protocol has vulnerable time equal to the frame propagation time?
7. Differentiate between inter domain and intra domain routing protocol?
8. Which metrics (at least two) can be observed in order to monitor the congestion in the network?
9. What is a socket address?
10. Where ICMP protocol is used?

Question No 3: Give the answers of the following Questions? **[6x5=30]**

(1) Write a note on the wireless medium used in communication?

(2) Consider a multiplexer having three input lines where each line has a data rate of 300kbps. If frame size is 9 bits. (3 bits taken from each input) then

i. How many frames are sent per second?
ii. What is the output bit rate?
iii. What is the duration of each bit in the output line

(3) Given a remainder of 111, a data unit of 10110011, and a divisor of 1001, is there any Error in data unit?

P.T.O

(4) Draw only the sender and receiver windows for a system using selective repeat ARQ, given the following?

a. Frame 0 is sent; frame 0 is acknowledged.
b. Frame 1 and 2 are sent; frame 1 and 2 are acknowledged.
c. Frame 3, 4 and 5 are sent; frame 4 is acknowledged; timer for frame 5 expires.

(5) Which of the following are easy/difficult to handle in Virtual-Circuit and Datagram subnets, and why? (Answer just in one line for each case)

i. Address parsing time
ii. Congestion control
iii. Router failure
iv. Quality-of-service

(6) Find the Initial addresses, Final addresses and also the Number of addresses in the block if one of the addresses is 140.120.84.24/20 ?