



Name :

Roll No. :

Invigilator's Signature :

CS / M.Tech(CSE) / SEM-1 / MCSE-105A / 2012-13

2012

COMPUTER COMMUNICATION NETWORK

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. Choose the correct alternatives for any ten of the following :

10 × 1 = 10

- i) Which of the following transmission impairments adds unwanted signals to a transmitted signal ?
 - a) Attenuation
 - b) Delay Distortion
 - c) Crosstalk
 - d) Attenuation Distortion.
- ii) According to Nyquist's theorem, the maximum transmission rate (in bps) on a noiseless channel for a given bandwidth is
 - a) Half bandwidth
 - b) Equal to the highest signal frequency
 - c) Twice highest signal frequency
 - d) Twice the bandwidth.

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- vii) IP addresses are converted to
- a) A binary string
 - b) Alphanumeric string
 - c) A hierarchy of domain names
 - d) A hexa decimal string.
- viii) Find the minimum bandwidth for an ASK signal transmitting at 2000 bps the transmission mode is half duplex.
- a) 100 Hz
 - b) 200 Hz
 - c) 1000 Hz
 - d) 2000 Hz.
- ix) The process-to-process delivering of the entire message is the responsibility of the layer
- a) Network
 - b) Transport
 - c) Application
 - d) Physical.
- x) A noiseless channel with a bandwidth of 3000 Hz is transmitting a signal with two signal levels. What is the maximum bit rate ?
- a) 2000 bps
 - b) 3000 bps
 - c) 5000 bps
 - d) 6000 bps.



- xi) Which of the following is an application layer service
- a) Remote login
 - b) File transfer and access
 - c) Mail service
 - d) All of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. a) What do you mean by Switching ?
- b) What are the differences between Circuit Switching network and Packet Switching Network ? $2 + 3$
3. What is the QAM ? What is the advantage of QAM over ASK and PSK ? $3 + 2$
4. What is CRC ? How do you find CRC ?
5. In selective repeat ARQ, the size of the sender and receiver side will be at most one-half of 2^m , where m is the sequence number of the frame.
6. Describe the interleaving process in TDM ?



GROUP – C

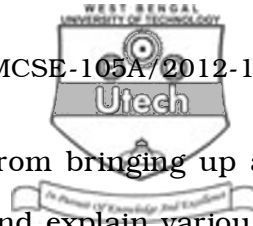
(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is the major disadvantage in using NRZ encoding ? How does RZ encoding attempt to solve the problem ? 2 + 2
- b) Draw line encoding using Manchester encoding for a bit pattern 1010001011. 4
- c) A data bit sequence M = 1101110 is transmitted but the receiver receives the sequence with any one bit corrupted. Using hamming code to identify the corrupted bit position and correct the bit. 7
8. a) Describe stop and wait ARQ with diagram. What is Piggy backing networking ? 3 + 2
- b) Name the type of HDLC frames and give a brief description of each frame. 1 + 2 + 2 + 2
- c) In HDLC, what is the bit stuffing and why is it needed ? 3



9. a) What is transparent bridge ? What is looping problem in transparent bridge ? What is the procedure to solve the problem ? 3 + 2 + 3
- b) Discuss CSMA/CD multiple access strategy ? What is token passing ? 4 + 3
10. a) What do you mean by routing ? 2
- b) What are the differences between TCP and UDP ? 3
- c) What do you mean by Subnetting ? In a network, IP is 190.240.33.91 and number of subnets is 13. What will be the subnet addresses ? 2 + 3
- d) What is supernetworking ? What do you mean by classless addressing ? 2 + 3
11. a) If a = propagation delay/transmission delay and P is the probability of frame error then prove that Channel utilization in the case of stop and wait ARQ protocol is $(1 - P) / (1 + 2a)$. Assume negligible sender, receiver processing time, transmission time and acknowledgement time. 5



- b) Draw the simplified phase diagram from bringing up a line up and bringing it down in PPP and explain various phases. 5

- c) Ethernet technology is based on broadcast protocol. Explain. What happens when a collision occurs in Ethernet Communication. 3 + 2

12. Write short notes on any *three* of the following : 3 × 5

- a) DHCP
- b) NAT
- c) Congestion Control
- d) Transmission Impairments
- e) FM.

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