



Name :

Roll No. :

Invigilator's Signature :

CS/B.TECH/CSE/NEW/SEM-6/CS-602/2013

2013

COMPUTER NETWORKS

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

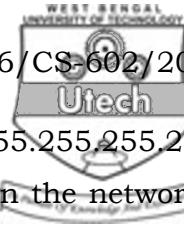
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) If the dataword is 111111, the divisor is 1010, the remainder is 110, the CRC codeword is
 - a) 1111111010
 - b) 111111110
 - c) 1010110
 - d) 1101010.
 - ii) In ARQ, if a NAK is received, only the specified damaged or lost frame is transmitted.
 - a) Go-Back-N
 - b) Selective Repeat
 - c) Stop-and-wait
 - d) all of these.
 - iii) is a collision free technique.
 - a) Token Passing
 - b) CSMA
 - c) ALOHA
 - d) CSMA/CD.
 - iv) Repeaters function in the layer.
 - a) Physical
 - b) Data link
 - c) Network
 - d) Transport.

- ## GROUP – B

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

- 2



- b) A network is with subnet mask of 255.255.255.254. Determine maximum number of Hosts in the networks. What is the broadcast address of that network ?
4. a) Sketch the waveform for the bit stream 10110010 in differential Manchester encoding scheme.
- b) Write the difference between bit stuffing and character stuffing. 2 + 3
5. What is intranet ? Why is coaxial cable superior to twisted pair cable ? Differentiate between IP address and MAC address. 1 + 2 + 2
6. a) Suppose a sender is using sliding window protocol of window size 15. What will be the window status for the following occurrence ? Sender has sent packets 0 to 11 and has received NAK 6.
- b) "In Selective-Repeat ARQ, sender window size $> 2^{m-1}$." Is it correct ? Justify. 2 + 3

GROUP – C

(Long Answer Type Questions)

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

7. a) Given a 10 bit sequence 1010011110 and a divisor 1011. Find the CRC. Check your answer.
- b) Write down the similarities and differences between OSI and TCP/IP model.
- c) What is piggybacking ? 7 + 5 + 3



8. a) Discuss and differentiate between persistent CSMA and non-persistent CSMA.
- b) Prove that $2^r \geq m + r + 1$, where m is the no. of data bits and r is the no. of redundancy bits required to correct the error.
- c) How does a single bit error differ from a burst error ?
- 5 + 5 + 5
9. a) State the advantage of IPV6 over IPV4.
- b) Explain link state routing.
- c) Differentiate between ARP and RARP. 5 + 5 + 5
10. a) What is a multiplexer ? Discuss one analog multiplexing technique.
- b) Describe the following encoding techniques with suitable diagrams :
- i) QPSK
- ii) QAM
- iii) FSK
- c) Discuss the advantages of fibre optic cable.
11. a) Find the expressions for average delay and throughput for both pure ALOHA and slotted ALOHA. Compare their performances as well.
- b) What do you understand by data privacy ? How can the authentication, integrity and non-repudiation be implemented by digital signature ?
- c) Differentiate between circuit switching and packet switching.

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