

Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech/CSE/OLD/SEM-6/CS-601/2013

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 any *ten* of the following :
 $10 \times 1 = 10$

- i) Port number is
 - a) process number
 - b) computer physical address
 - c) both (a) and (b)
 - d) none of these.

- ii) What network topology implements at least two paths to and from each node ?
 - a) Bus
 - b) Ring
 - c) Mesh
 - d) Star.



iii) Segmentation is done is

- a) Data link layer
- b) Network layer
- c) Transport layer
- d) Physical layer.

iv) Which channel access method is used in Ethernet networks ?

- a) Pure ALOHA
- b) CSMA/CD
- c) CSMA/CA
- d) Slotted ALOHA.

v) UDP is

- a) Connection-oriented
- b) Connectionless
- c) Both (a) & (b)
- d) None of these.

vi) Which address cannot be changed ?

- a) Hardware address
- b) Logical address
- c) Both (a) & (b)
- d) None of these.



vii) The data link layer is divided into two sub layers.

Two correct sub layers are

- a) LLC & DLC
- b) MAE & MCA
- c) MAC & LDC
- d) MAC & LLC.

viii) Which detection method can detect a single bit error ?

- a) Simple parity check
- b) Two dimensional parity check
- c) CRC
- d) all of these.

ix) Checksum of 10101001 00111001 ?

- a) 00001101
- b) 11100001
- c) 00011101
- d) 11110001.

x) Flow control is the responsibility of

- a) Data link layer
- b) Transport layer
- c) Both (a) and (b)
- d) Application layer.

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xi) Which orbit has the highest altitude ?

- a) LEO
- b) GEO
- c) MEO
- d) HEO.

xii) The/n format representation of mask ?

11111111 11111111 11111111 00000000

- a) /8
- b) /24
- c) /16
- d) /3.

GROUP - B

(Short Answer Type Questions)

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

2. Categorize the four basic topologies and give an advantage of each type. 2 + 3
3. Explain leaky bucket and token bucket algorithm.
4. Generate the CRC code for the data word of 1010011110.
The divisor is 1011.
5. Derive the expression of the efficiency of pure ALOHA.
Compare it with slotted ALOHA. 2 + 3



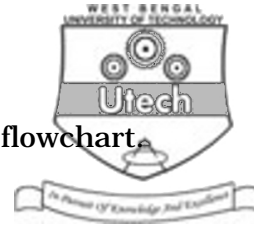
6. A router with IP address 192.165.88.10 and Ethernet physical address 21:45:AB:4F:66:CD has received a packet for a destination with IP address 192.165.78.23 and Ethernet physical address AB:B7:A2:4F:47:CD. Show the entries in the ARP request packet sent by the router. Encapsulate the ARP request packet in a data link frame. Fill all the fields.

GROUP - C

(Long Answer Type Questions)

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

7. a) A company is granted the site the address 192.168.100.0, the company needs 10 subnets. Design the subnets (which include subnet mask, number of subnets, number of hosts in each subnet, first and last address of each subnet). 5
- b) What is the advantage of two dimensional parity over simple parity ? Explain with suitable example. 3
- c) Briefly discuss about different guided media that are used in computer networks and make a comparison among them. 5
- d) What are LLC & MAC ? 2



8. a) Discuss CSMA/CA with the help of a flowchart. 5
- b) Why CSMA/CD is not implemented in WLAN ? 3
- c) Why acknowledgement is numbered in stop & wait protocol ? Discuss the situation when unnumbered acknowledgements can create confusion in the sender & receiver end. 4
- d) Describe 802.3 header formats. Why padding is required ? 3
9. a) What is the default mask and broadcast address for class B ? Specify the private IP range for class A address. 3
- b) Why dynamic routing is preferred over static routing algorithm in a network, which changes continuously ? 3
- c) Explain briefly RSA algorithm. 6
- d) What are the differences between TCP and UDP ? 3



10. a) What are the differences between packet switching & circuit switching ? 4

b) Explain the diagram, how the lost frame, delayed and lost acknowledgement are handled in Go-Back-N- ARQ.

5

c) What do you understand by data privacy ? How can authentication, integrity and non-repudiation be implemented by the digital signature technique ? 6

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

a) RIP

b) ARP Packet format

c) VLAN

d) FIREWALL

e) FTP.
