

Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech (ECE-NEW)/SEM-6/EC-602/2010

2010

**COMPUTER COMMUNICATION AND
NETWORKING**

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 allows devices on one network to communicate with devices on another network ?
- | | |
|-----------|----------------|
| a) Switch | b) Multiplexer |
| c) Modem | d) Gateway. |
- ii) All the packets in a message follow the same path in
- | |
|--------------------------------------|
| a) Datagram packet switching |
| b) Message switching |
| c) Virtual circuit switching |
| d) Virtual circuit packet switching. |

CS/B.Tech (ECE-NEW)/SEM-6/EC-602/2010

iii) A subnet mask in class A addressed network has fourteen 1's. How many subnets does it define ?

- [illegible]

iv) Pure ALOHA has a maximum efficiency of

- a) 10% b) 37%
- c) 18% d) none of these.

v) Host to host connectivity is provided by

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

vi) Which of the following access methods has no collision ?

- a) CSMA/CD b) CSMA/CA
- c) ALOHA d) Token passing.

vii) The latest modulation technique used by data modems is

- [illegible]

viii) "Bit stuffing" is a common technique available n

- a) Character oriented protocol
- b) Sliding window with go-back-N
- c) Repeated sliding window
- d) Bit oriented protocol.

ix) A conventional PABX uses

- a) Circuit switching b) Packet switching
- c) Both (a) & (b) d) None of these.

x) Which error detection method involves polyomials ?

- a) CRC
- b) LRC
- c) VRC
- d) Checksum calculation.

xi) Which protocol is used for file transferring ?

- a) SMTP b) SCTP
- c) FTP d) TCP.

CS/B.Tech (ECE-NEW)/SEM-6/EC-602/2010

xli) A device operating at the Network layer is called

- a) Bridge b) HUB
- c) Router d) Repeater.

xiii) The sharing of a medium and its path by two or more devices is called

- a) Modulation b) Encoding
- c) Multiplexing d) Decoding.

xiv) Which one of the following is an Application layer service ?

- a) FTP b) Remote log in
- c) Mail service d) All of these.

GROUP - B

(Short Answer Type Questions)

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

2. Explain the migration process from IPv4 to IPv6. Write down four advantages of IPv6 over IPv4. 3 + 2
3. Compare Unicast addressing & Multicast addressing. What do you mean by guard band ? 3 + 2
4. Derive the expression of the efficiency of pure ALOHA. 5
5. Compare Path vector & Link state routing mechanisms. 5
6. Explain Leaky bucket algorithm for congestion control. 5

GROUP - C

(Long Answer Type Questions)

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

7. a) Describe the design goals of Cell-relay protocol for wide area networking.
- b) What is the relation between Virtual circuits & Virtual paths for a particular transmitting path during the data transfer ?
- c) Compare the following :
- i) VPI & VCI
 - ii) PVC & SVC
- d) What do you mean by ATM LAN ? Discuss ATM LAN architecture. $3 + 3 + (2 \times 2) + 5$
8. a) Analyze the performance of pure ALOHA. How does slotted ALOHA improve performance over pure ALOHA ? In both cases find the expressions for average delay & throughput.
- b) Compare the performance of pure ALOHA with slotted ALOHA.
- c) Describe ALOHA with flow-chart. $2 + 2 + 4 + 3 + 4$

CS/B.Tech (ECE-NEW)/SEM-6/EC-602/2010

9. a) What do you mean by Distance Vector Routing ?
- b) Describe the Link state routing mechanism with proper routing protocol function.
- c) Compare Transient link & Stub link.
- d) What do you mean by Static routing table & Dynamic routing table ?
- e) Compare intra-domain & inter-domain routing.

3 + 4 + 3 + 2 + 3

10. a) Define Token ring and Token bus.
- b) Describe the CDMA process.
- c) Compare CSMA/CD & CSMA/CA with proper flow-chart.
- d) A group of N stations share a 56 kbps Aloha channel. Each station outputs a 1000 bit frame on an average of once 100 sec, even if the previous one has not been sent. What is the maximum number of N ?

2 + 4 + (2 × 3) + 3

11. a) What is the function of ADD/DROP Multiplexer in case of SONET ?
- b) Describe the SONET device – layer relationship.
- c) What do you mean by Byte interleaving ?
- d) Compare point to point & multipoint network in SONET.
- e) What is the difference between SONET & SDH ?

4 + 3 + 2 + 3 + 3

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

- a) DWDM
- b) RSA Algorithm
- c) HTTP
- d) MAC
- e) E-mail
- f) Digital Signature.
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