



Name :

Roll No. :

Invigilator's Signature :

**CS/BCA/SEM-5/BCA-501/2009-10
2009**

**DATA COMMUNICATION & COMPUTER
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 the following :

$$10 \times 1 = 10$$

- i) Error detection at the data link level is achieved by
 - a) Bit suffering
 - b) Cyclic redundancy codes
 - c) Hamming codes
 - d) Equalization.
- ii) IP address in the class B is given by
 - a) 125.123.123.2 b) 191.023.21.54
 - c) 192.128.32.56 d) 10.14.12.34.
- iii) Given the IP address 18.250.31.14 and subnet mask 255.240.0.0. The calculated subnet address should be
 - a) 18.0.0.14 b) 18.31.0.14
 - c) 18.240.0.0 d) 18.9.0.14.



- iv) TCP is a/an
 - a) reliable connection oriented protocol
 - b) unreliable connection oriented protocol
 - c) reliable connection less protocol
 - d) unreliable connection less protocol.
- v) is the access protocol used by traditional Ethernet LAN.
 - a) CSMA
 - b) CSMA/CD
 - c) ALOHA
 - d) Token Passing.
- vi) After a message is decrypted, it is called
 - a) Plaintext
 - b) Ciphertext
 - c) Cryptotext
 - d) Cryptonite.
- vii) In distance vector routing a router sends out information
 - a) at regularly scheduled intervals
 - b) only when there is a change in its table
 - c) only when a new host is added
 - d) only when a new network is added.
- viii) The term Polling is related to
 - a) multiple-access protocol
 - b) data-link control
 - c) random access
 - d) none of these.
- ix) IGMP used in
 - a) application layer
 - b) presentation layer
 - c) session layer
 - d) none of these.
- x) Shanon capacity determines
 - a) noise present in a channel
 - b) highest data rate in a noisy channel
 - c) channel is noiseless
 - d) all of these.



GROUP – B

(Short Answer Type Questions)

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

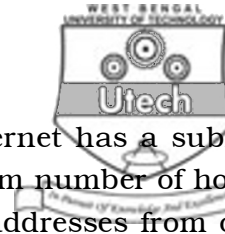
2. a) Distinguish between open-loop congestion control and closed-loop congestion control.
b) What is QOS ? 3 + 2
3. a) What are baud rate and bit rate ? Establish the relationship between these two.
b) Write the advantages of FM technique over AM technique. 3 + 2
4. How does ARQ correct an error ? What is the purpose of the timer at the sender site in system using ARQ ? 2 + 3
5. What is the purpose of flow control ? What would an application use UDP instead of TCP ? 3 + 2
6. Why class of IP address is needed ? Briefly describe the TCP connection establishment and termination. 2 + 3

GROUP – C

(Long Answer Type Questions)

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

7. a) What is the difference between
 - i) Circuit switching and Packet switching
 - ii) TDM and FDM ? 8b) What advantages does TCP have over UDP ? What are the features for which may TCP be a reliable protocol ? 2 + 2
- c) Explain the functions of repeater, bridge and gateways. 3
8. What is the major disadvantages of NRZ encoding technique ? How RZ encoding attempt to solve the problem ? What are the advantages and disadvantages of Parallel Transmission ? How does FDM combine multiple signals into one ? How is time-division switching superior to space-division switching ? 2 + 3 + 4 + 3 + 3



9. What is masking ? A network on the internet has a subnet mask 255.255.240.0. What is the maximum number of hosts it can handle ? ARP and RARP both map addresses from one space to another. In this respect they are similar. However, their implementations are fundamentally different. In what major way do they differ ? Apply Bellman-Ford routing algorithm to reach from node 1 to 5 for the following graph : 3 + 3 + 3 + 6

Dia.

10. How does single bit error differ from a burst error ? Discuss the concept of redundancy in error detection and correction ? What kind of error is undetectable by the checksum ? Define framing and the reason for its need. What is the purpose of NIC ? What is the difference between connectionless and connection-oriented service ? What type of service is provided by IPV4 ? Explain the difference between tunneling and dual stack strategies during the transition period ? $2 + 2 + 1 + 2 + 1 + 2 + 2 + 3$
11. Write short notes on any *three* of the following : 3×5
- a) UDP
 - b) X.25
 - c) HDLC
 - d) DNS
 - e) Firewall.
 - f) Public key cryptography.