Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.Tech/IT(N)/SEM-5/IT-504B/2012-13

2012
DATA COMMUNICATION (ECE)

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 × 1 = 10

　　i) In the .... layer, the data unit is called frame.

　　　　a) Physical　　　　　　b) Network

　　　　c) Application　　　　　d) Data link.

　　ii) Connections to the thick Ethernet cable are generally made using

　　　　a) RJ-45　　　　　　　b) BNC connectors

　　　　c) Vampire taps　　　　d) DNC connectors.

5408 (N)　　　　　　　　　　　　　　　　　　　　[Turn over

iii) Ethernet address is of .... bit size.

a) 32   b) 48

c) 64   d) 16.

iv) Sliding window protocol is a technique which is used for

a) Error control   b) Session control

c) Flow control   d) Concurrency control.

v) In an optical fibre, the inner core is .... the cladding.

a) denser than

b) less dense than

c) of the same density as

d) another name for.

vi) For stop and wait ARQ, for n data packet sent .... acknowledgement is needed.

a) n b) $n + 1$

c) $n - 1$ d) $2n$.

vii) The Hamming code is a method of

a) error detection   b) error correction

c) error encapsulation   d) both (a) and (b).

viii) Service point addressing is done in

a) Physical layer   b) Data link layer

c) Network layer   d) Transport layer.

ix) For two bit error correction what is the minimum Hamming distance required ?

   a) 1   b) 2

   c) 3   d) 5.

x) ATM is a .... technology.

   a) asynchronous TDM   b) statistical TDM

   c) synchronous TDM   d) asynchronous SDM.

GROUP – B
(Short Answer Type Questions)
Answer any *three* of the following.   3 × 5 = 15

2. a) Explain and compare between Message switching and Packet switching.

   b) Explain and compare between connection oriented and connection-less services.

3. a) Explain different communication modes with example.

   b) What are the different components of data communication ?

4. Explain different physical topologies with diagram. Discuss advantages and disadvantages of one over other.

5. Explain ALOHA and slotted ALOHA with diagram.

6. a) Explain different types of guided transmission media.

   b) What are the advantages of fibre optics ?

GROUP – C
(Long Answer Type Questions)
Answer any *three* of the following.   3 × 15 = 45

7. a) What is block coding ?

    b) What is Hamming distance ? Explain with example.

    c) Let Hamming distance of a code scheme is 4 (four). What is the error correction and detection capacity of this scheme ?

    d) Explain Hamming code with encoding and decoding and error correction process.   2 + 2 + 2 + 9

8. a) What is escape character in framing ?

    b) Explain Go-back-N ARQ with flow diagram.

    c) Explain what should be the size of the send window and receiver window in Go-back-N ARQ.   2 + 8 + 5

9. a) Explain different frame formats of HDLC.

    b) What are Password Authentication Protocol and Challenge Handshake Authentication Protocol ?   10 + 5

10. a) Explain the process of CSMA/CD. How is collision detected ?

    b) What should be the minimum frame size to detect collision ?

    c) Why is CSMA/CA used in wireless communication ?

                                                5 + 5 + 5

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