



Name :

Roll No. :

Invigilator's Signature :

CS/MCA/SEM-2/MCA-201/2013

2013

DATA COMMUNICATION & COMPUTER NETWORK

Time Allotted : 3 Hours

Full Marks : 70

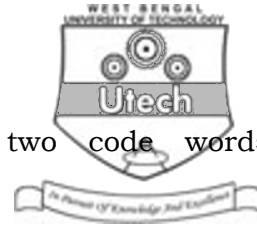
The figures in the margin indicate full marks.

*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) Which company developed the TCP/IP protocol for networking ?
 - a) IBM
 - b) DEC
 - c) DARPA
 - d) NOVELL.
 - ii) The Hamming code is a method of
 - a) error correction
 - b) error detection
 - c) error encapsulation
 - d) both (a) and (b).
 - iii) Flow control is used to prevent
 - a) overflow of sender buffer
 - b) overflow of receiver
 - c) collision between sender and receiver
 - d) underflow of sender and receiver.



- iv) Hamming distance between the two code words 10010101 and 00100111 is
 - a) 4
 - b) 5
 - c) 10110010
 - d) 11001011.
- v) Virtual circuit switching is a form of
 - a) Datagram switching
 - b) Message switching
 - c) Packet switching
 - d) Circuit switching.
- vi) Which of the following TCP/IP protocols allows an application program on one machine to send a datagram to an application program on another ?
 - a) RARP
 - b) ARP
 - c) TCP
 - d) FTP.
- vii) ARQ stands for
 - a) Automatic Repeat Quantization
 - b) Automatic Repeat Request
 - c) Automatic Retransmission Request
 - d) Acknowledge Repeat Request.
- viii) Manchester encoding is encoding.
 - a) return to zero
 - b) non-return to zero
 - c) return to one
 - d) none of these.
- ix) ALOHA
 - a) is used for channel allocation problem
 - b) is used for data transfer
 - c) is used for buffering
 - d) all of these.
- x) TCP is a/an
 - a) reliable connection oriented protocol
 - b) unreliable connection oriented protocol
 - c) reliable connection-less protocol
 - d) unreliable connection-less protocol.



GROUP – B

(Short Answer Type Questions)

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

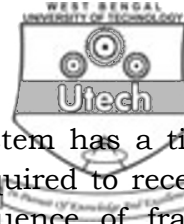
2. Differentiate between Circuit Switching and Packet Switching.
3. A generator function for CRC is $X^5 + X^2 + 1$.
 - a) What is the generator function in binary form ?
 - b) What is the checksum for the message 1101011011 in binary form ? $2\frac{1}{2} + 2\frac{1}{2}$
4. Briefly explain the importance of Multiplexing. Discuss the difference between TDM and FDM. $2 + 3$
5. How to convert a Digital signal to an Analog signal ? Compare between ASK and FSK. $2 + 3$
6. What are Baud rate and Bit rate ? Establish the relationship between these two. $2 + 3$

GROUP – C

(Long Answer Type Questions)

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

7.
 - a) How CSMA provides a clear improvement over ALOHA ?
 - b) How CSMA indicates further improvement by implementing CSMA/CD ?
 - c) Explain the function of a token ring ?
 - d) Explain how a receiver acknowledged a frame in token ring ? $4 + 4 + 5 + 2$
8.
 - a) What do you understand by the term 'Data Security' ?
 - b) Explain the various aspects of security with the help of private and public keys.
 - c) Explain RSA method with an example. $4 + 6 + 5$



9. a) Suppose that a stop and wait ARQ system has a time out value that is less than the time required to receive an acknowledgement. Sketch the sequence of frame exchanges that transpire between two stations when station *A* sends five frames to station *B* and no errors occur during transmission. 7
- b) Draw and explain the *I* frame and *U* frame in HDLC. 4
- c) Why do LANs tend to use broadcast networks ? Why do we not use networks consisting of multiplexers and switches. 2 + 2
10. a) Discuss the different steps of Distance Vector Routing. 5
- b) Explain the frame format of 802.5 LAN. How does FDDI differ from 802.5 LAN ? 3 + 2
- c) "Data Link layer ensures delivery within the same physical network, but transport layer ensures delivery within the networks." Explain. 5
11. Write short notes on any *three* of the following : 3 × 5
- a) DQDB
 - b) Piggybacking
 - c) GEO satellite
 - d) Domain Name System
 - e) X.25 protocol.

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