

Name :

Roll No. :

Invigilator's Signature :

CS/BCA/SEM-5/BCA-501/2013-14

2013

**DATA COMMUNICATION AND 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 the following : $10 \times 1 = 10$

i) Which topology requires a central controller or hub ?

- | | |
|---------|-------------------|
| a) Mush | b) Star |
| c) Bus | d) None of these. |

ii) FTP stands for

- | | |
|----------------------------|-----------------------|
| a) File Transfer Protocol | b) File Tree Protocol |
| c) Field Transfer Protocol | d) None of these. |

iii) The end to end delivery of the entire message is the responsibility of

- | | |
|------------------|------------------------|
| a) network layer | b) transport layer |
| c) session layer | d) presentation layer. |

- iv) RZ stands for
 - a) Return to zero
 - b) Return to zero position
 - c) Return to zero multipolar
 - d) None of these.
- v) Which of the following can be determined from a frequency domain graph of a signal ?
 - a) Bandwidth
 - b) Phase
 - c) Power
 - d) None of these.
- vi) Power gain can be represented as
 - a) $20 \log 2 (P_2/P_1)$
 - b) $10 \log 2 (P_2/P_1)$
 - c) $\log 2 (P_2/P_1)$
 - d) none of these.
- vii) ASK, PSK, FSK are the examples of
 - a) Digital to digital
 - b) Digital to analog
 - c) Analog to analog
 - d) None of these.
- viii) Synchronous transmission does not have
 - a) a start bit
 - b) a stop bit
 - c) gaps between bits
 - d) none of these.
- ix) IEEE stands for
 - a) Institute of electrical and electronic engineers
 - b) Institute of electronics and electrical engineers
 - c) International electrical and electronic engineers association.
 - d) None of these.
- x) Most popular cable used in communication nowadays is
 - a) Coaxial cable
 - b) Twisted pair cable
 - c) Fibre optic cable
 - d) None of these.

GROUP - B

(Short Answer Type Questions)

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

- 2.. a) How does graded index multimode optical fibre transmission minimize data loss ? 3
- b) What is Burst Error ? 2
3. Given a 10 bit sequence 1011001001 and a divisor of 1011, find the CRC.
4. a) What is the significance of twisting in a twisted pair cable ? 3
- b) What is Trellis coding ? 2
5. What are the advantages of IPv6 over IPv4 ?
6. What are the functions of Gateway and Repeater ? 2 + 3

GROUP - C

(Long Answer Type Questions)

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

7. a) Draw the digital signal encoding format for NRZI, NRZL, RZ Manchester Code and Differential codings for the digital signal 01001100011 and also write down the procedure in brief. 10
- b) In QPSK modulation data rate is 9600 bps. Calculate baud rate. 2
- c) An analog signal carries 4 bits in each signal element. If 1000 signal elements are sent per second, find baud rate and bit rate. 3
8. a) Why do we need use of layered protocol ? 5
- b) Give three differences between OSI reference model and TCP/IP model. 4

- c) The bit pattern 01011001 is to be transmitted using the following techniques :
- i) ASK
 - ii) FSK
 - iii) PSK 6
9. a) Write down the names of different multiple access protocols. Compare FDMA, TDMA and CDMA. 3 + 5
- b) State Nyquist theorem. 2
- c) Write a short note on CSMA/CD. 5
10. a) Draw the block diagram of stop-and-wait ARQ protocol and explain it. 3 + 3
- b) Explain the Sliding window. What is Piggy backing ? 6 + 3
11. a) What do you mean by congestion ? Why does congestion occur in the network layer ? 5
- b) Describe the concept of Leaky Bucket for controlling congestion. 6
- c) Explain the terms 'Bridging' and 'Routing'. 4
12. Write short notes on any *three* of the following : 3 × 5
- a) Safe IP
 - b) Public key and private key
 - c) Circuit switched and packet switched networks
 - d) 802.3 LAN
 - e) X.25 protocol.
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