



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech/(ECE-OLD)/SEM-6/EC-602/2013

2013

COMPUTER COMMUNICATION & NETWORKING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

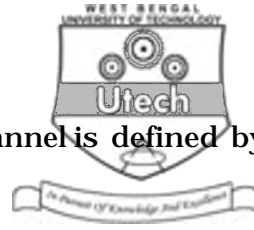
*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :
 $10 \times 1 = 10$

- i) Vulnerable time for CSMA/CD protocol is
 - a) twice of average frame transmission time
 - b) twice of propagation time
 - c) propagation time
 - d) none of these.
- ii) Advantage of layering includes
 - a) multi-vendor integration
 - b) data hiding nad encapsulation
 - c) easy testing
 - d) all of these.



iii) Multiple access of communication channel is defined by the

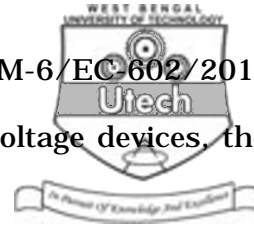
- a) Data link layer b) Physical layer
- c) Session layer d) Network layer.

iv) Switching in the network layer in the internet uses

- a) Datagram approach to packet switching
- b) Virtual circuit switching
- c) Circuit switching
- d) none of these.

v) Cat 5E cable supports data rates up to

- a) 20 Mbps in digital analog mode
- b) 100 Mbps in digital and analog mode
- c) 125 Mbps in digital mode
- d) 200 Mbps.



vi) In an environment with many high voltage devices, the best transmission medium would be

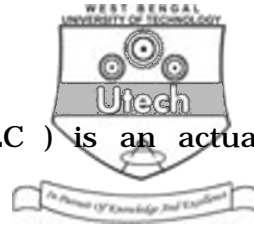
- a) Twisted pair cable
- b) Co-axial cable
- c) Optical fibre
- d) STP cable.

vii) In sonet Synchronous transport module (STM-3) raw data rate is

- a) 51.84 Mbps
- b) 466.56 Mbps
- c) 155.52 Mbps
- d) none of these.

viii) In CRC given polynomial is $x^7 + x^5 + x^2 + x + 1$, the divisor is

- a) 10100111
- b) 01011000
- c) 11100011
- d) 11000010.



- ix) High level data link control (HDLC) is an actual protocol designed to support
- a) both half duplex and full duplex communications over point to point link
 - b) full duplex communication over point to point link
 - c) none of these
 - d) simplex communication.
- x) For stop and wait ARQ, n data frames are sent, ACK are needed
- a) n
 - b) $2n$
 - c) $n - 1$
 - d) $n + 1$.
- xi) If an Ethernet destination address is 08-07-06-05-44-33 then this is a
- a) Unicast address
 - b) Multicast address
 - c) Broadcast address
 - d) none of these.
- xii) In classful addressing scheme class B addressing provides
- a) 16384 blocks
 - b) 2048 blocks
 - c) 8192 blocks
 - d) 4096 blocks.



xiii) Four LANs (each using bus network) are connected through a 8 port hub

- a) the network has 4 collision domains and 1 broadcast domain
- b) the network has 1 collision domain and 1 broadcast domain
- c) the network has 8 collision domains and 8 broadcast domains
- d) none of these.

xiv) In a network the IP address of host is 205.16.37/28.
The first address of the network is

- a) 205.16.37.32 b) 205.16.37.0
- c) 205.16.0.0 d) 205.34.35.0.

xv) A data-word consists of 5 bits. The no. of redundant bits required to make a code word is

- a) 4 b) 5
- c) 3 d) none of these.



GROUP - B
(Short Answer Type Questions)
Answer any *three* of the following.

3 × 5 = 15

2. What is the difference between classful and classless addressing schemes ? A router inside the organization receives the same packet with destination address 190.240.33.91. Show how it finds the sub-network address to route the packet. Assume that subnet mask is /19.
3. Why is flow control necessary in data communication ? Why are start bit and stop bit used in serial asynchronous communication ? 3 + 2
4. What is the basic difference between bridge and switch ? Why is hub called multi-port repeater ? 3 + 2
5. Given data unit is 1100111-1011001-1100101-0101101, how is 2 dimensional parity generated from the given data unit ? Why is data compression required when the real time data moves from one network to another network ? 3 + 2
6. What is the difference between physical address and logical address ? Explain with example. Using an example show how physical addresses are changed in hop to hop communication during the journey of packet ? 2 + 3



GROUP - C
(Long Answer Type Questions)

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

7. a) Write down the different multiple access methods used in data communication.
b) What is CSMA/CD ? Describe CSMA/CD with flow chart. Prove that vulnerable time for slotted aloha protocol is average frame transmission time. $2 + 8 + 5$
8. What are the major drawbacks of X.25 protocol ? What are the advantages of ATM based network ? Describe IEEE 802.3 Ethernet Lan architecture. $3 + 4 + 8$
9. Why is window size $2^m - 1$ in case of sliding window protocol ? Describe stop and wait ARQ lost frame operation. How does piggy backing save the bandwidth ? $5 + 6 + 4$
10. What are unicast multicast addresses ? Describe IEEE 802.3 MAC frame architecture. Why is minimum frame size 64 byte for 10 base T-ethernet ? $2 + 8 + 5$
11. What are the principles of security ? Why is symmetric key cryptography used for long messages ? How does symmetric key cryptography differ from public key cryptography ? What is RSA ? How does the decryption procedure take place using RSA technique ? $2 + 2 + 3 + 1 + 7$

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12. What are the major advantages of layering model ? Describe TCP/IP model of networking. Give at least one example for each layer. 5 + 10

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

- a) V.90 modem
- b) Data encryption standard
- c) Internetworking using IP address
- d) Packet switching
- e) Transmission media.

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