

CS/B.Tech/Even/IT/6th Sem/IT-602/2014

ii. 01111111 11110000 01100111 01111101

[4+(1+5)+3+2]

9. a) Distinguish Datagram switching from Virtual Circuit Switching.  
 b) What do you mean by Subnet masking? Explain how it can be achieved with one example.  
 c) What do you mean by unicasting, multicasting and broadcasting?  
 d) Explain Manchester encoding technique with example.

[5+(1+3)+3+3]

10. a) Explain link State routing.

b) An organization granted a block of address with the beginning address 13.26.75.0/24. There are 256 addresses in this block. The organization needs to have 10 subnets. 2 subnets each have 64 addresses, 1 subnet each have 32 addresses, 4 subnets each have 16 addresses, 6 subnets each have 4 addresses. Design the subnets.

c) Calculate HLEN (in IPv4) value if the total length is 1200 bytes, 1176 of which is data from upper layer.

d) What is flooding?

[5+5+3+2]

11. a) In Selective Repeat ARQ, the size of the sender window must be at most  $2^{n-1}$ . Explain it.  
 b) How is the connection established using three-way handshaking? Explain in detail.  
 c) What is Firewall? How does it resolve the security issues?  
 d) What do you understand by message security?

[4+5+3+3]

12. Write short notes on any three of the following:

[3 x 5]

- a) IEEE 802.11 project  
 b) Bluetooth  
 c) ISDN  
 d) HDLC  
 e) Cryptography  
 f) HTTP

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**2014**

## Computer Networking

Time Alloted : 3 Hours

Full Marks : 70

*The figure 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

10x1=10

- i) Flow control in OSI reference model is performed in

a) Data Link Layer

b) Network Layer

c) Session Layer

d) Application Layer

- ii) If a TDMA network has 16 stations, the medium bandwidth has ..... bands.

a) 64

b) 16

c) 8

d) 4

- iii) Which of the following is not a routing protocol?

a) RIP

b) ARP

c) OSPF

d) BGP

- iv) The bit rate is always equal to the baud rate in which type of signal?

a) ASK

b) FSK

c) PSK

d) None of these

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**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following 3x5=15

- v) Which of the following allows devices on one network to communicate with devices on another network?  
 a) Multiplexer                      b) Gateway  
 c) Switch                              d) Modem
- vi) For Stop and Wait ARQ, for  $n$  data packets sent, ..... acknowledgements are needed.  
 a)  $n$                                       b)  $2n$   
 c)  $n - 1$                                 d)  $n + 1$
- vii) Slotted ALOHA has a maximum efficiency of  
 a) 9.2%                                  b) 18.4%  
 c) 36.8%                                d) None of these
- viii) In the ..... layer, the data unit is called frame.  
 a) Physical Layer  
 b) Data Link Layer  
 c) Network Layer  
 d) Application Layer
- ix) In HDLC a 0 bit is inserted after ..... consecutive 1 bits in the message data.  
 a) 4                                        b) 5  
 c) 6                                        d) 7
- x) A subnet mask in class A network has fourteen 1's. How many subnets does it define?  
 a) 8                                        b) 32  
 c) 64                                      d) 128
- xi) Given the IP address 180.25.21.172 and the subnet mask 255.255.192.0, what is the subnet address?  
 a) 180.25.21.0                      b) 180.25.0.0  
 c) 180.25.8.0                        d) 180.0.0.0
- xii) MAC address ..... the physical address.  
 a) is not the same as  
 b) is the octal conversion of  
 c) means  
 d) has no relation with

2. a) Compare and contrast between OSI and TCP layered architecture.  
 b) What is the utility of layered architecture? 3+2
3. a) What is IP address?  
 b) Compare classful and classless addressing. 2+3
4. Write the advantages of ICMP and IGMP over IPv4.
5. Briefly explain modes of data communication in a network.
6. Explain RSA algorithm with an example.

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following. 3x15=45

7. a) Given a 10 bit sequence 1010011110 and a divisor polynomial  $x^3+x^2+1$ . Find the CRC. Check your answer.  
 b) A channel has a data rate of 4kbps and propagation delay of 20ms. For what range of frame size does stop-and-wait give an efficiency of at least 50%?  
 c) Why CSMA/CA is not used in wireless LAN? What is the requirement of SFD? What is Slotted ALOHA?  
 [5+5+(2+2+1)]
8. a) Write down the main function of network layer.  
 b) What is IP datagram? Write down all the fields of IP datagram.  
 c) Find the netid and the hostid of the following IP addresses.  
 i. 23.67.12.1  
 ii. 190.12.67.9  
 d) Find the class of the following IP addresses.  
 i. 11110111 11110011 10000111 11011101