

# COMPUTER NETWORKS

CS 602

GROUP – A

## (Multiple Choice Type Questions)

1. Choose the correct alternative –

- i) For n-devices in a network, what is the number of cables required for a mesh topology?
  - a)  $n!$
  - b)  ${}^nC_r$
  - c)  $n * n$
  - d) none of these
- ii) The two parameters used for measuring the performance of a network are
  - a) throughput and delay
  - b) power and delay
  - c) power and throughput
  - d) throughput and buffer size
- iii) Flow control in OSI reference model is performed in
  - a) Data link layer
  - b) Application layer
  - c) Network layer
  - d) Session layer
- iv) The hamming code is a method of
  - a) error detection
  - b) error correction
  - c) error encapsulation
  - d) both (a) & (b)
- v) In the string 219.46.123.107, what is the network address of the host we are looking for?
  - a) 219.46.123.0
  - b) 107.123.46.0
  - c) 107.123.0.0
  - d) 107.0.0.0
- vi) For Stop and Wait ARQ, for n data packets sent, ..... acknowledgements are needed.
  - a) n
  - b)  $n - 1$
  - c)  $2n$
  - d)  $n + 1$
- vii) Which of the following protocols is a Network layer protocol?
  - a) IPX
  - b) UDP
  - c) FTP
  - d) Telnet
- viii) Which of the following information is not used by Screening Routers?
  - a) Profile information
  - b) IP address
  - c) Hardwired address
  - d) Type of connection

- ix) Which of the following is an application layer service?
  - a) Remote login
  - b) File transfer and access
  - c) Mail service
  - d) All of these
- x) A bridge has access to the ..... address of a station on the same network.
  - a) Physical (MAC)
  - b) network
  - c) service access point
  - d) all of these

#### **GROUP – B**

##### **(Short Answer Type Questions)**

2. What is IP address? Compare classful address and classless address.
3. Why do we need a DNS system, when we can directly use an IP address? What is the purpose of the inverse domain?
4. What are the major disadvantages in using NRZ encoding? How does RZ encoding attempt to solve the problem?
5. Why CSMA/CA is not used in wireless LAN? What is the requirement of SFD? What is slotted ALOHA?
6. Explain 'Selective repeat ARQ protocol' with the help of diagram.
7. a) What is the difference between TCP and UDP?  
b) Describe addressing system used by SMTP.

#### **GROUP – C**

##### **(Long Answer Type Questions)**

8. a) What sampling rate is needed for a signal with bandwidth of 10,000 Hz (1,000 to 11,000 Hz)?  
b) Applying CRC algorithm, determine the transmitted frame for the frame 11010111 and for the generator polynomial  $x^3 + x^2 + 1$ .  
c) The code 11110101101 was received. Using the Hamming Code algorithm, determine the original code sent.  
d) A channel has a data rate of 4 kbps and propagation delay of 20 ms. For what range of frame size does stop-and-wait give an efficiency of at least 50%?
9. a) Briefly explain IPv4 header fields..  
b) An ISP block of 1024 address. It needs to divide the address among 1024 customers. Does it need subnetting? Explain your answer.  
c) Write the advantages of ICMP and IGMP over the IPv4.

10. a) How does Leaky bucket congestion control algorithm work?  
b) TCP and UDP – which one is better? Justify your answer..  
c) Distinguish between the working principles of circuit switching, message switching and packet switching.
11. a) What is the basic difference between CSMA and CSMA/CD?  
b) Briefly explain CSMA/CA procedure.  
c) “Transport layer is the true end to end layer”. Critically comment.  
d) Write down the difference between symmetric key cryptography and asymmetric cryptography.
12. Write short notes on any three of the following –  
a) FTP  
b) Cryptography  
c) RSA Algorithm  
d) ICMP  
e) HTTP