KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2018

Marks Scored:

Level : B.Sc.
Year : II

Course : COMP 204
Semester: II

Exam Roll No.: Time: 30 mins. F.M. : 10

Registration No.: Date :MAR 0 8 2018

SECTION "A"
[20 Q.×0.5=10 marks]

Choose the most appropriate answer

1. Data Communication are transfer of data through some
   a. linear medium. b. transmission medium.
   c. network LAN. d. protocols.

2. A communication device that combines transmissions from several I/O devices into one line is a
   a. Concentrator. b. Modifier.
   c. Multiplexer d. Full-Duplex Line

3. BUS, RING and STAR TOPOLOGIES are mostly used in
   a. LAN b. MAN c. WAN d. Internetwork

4. Node to Node data transfer is handled by
   a. Data Link Layer b. Network Layer
   c. Transport Layer d. Session Layer

5. In which layer encryption is done?
   a. Network Layer. b. Transport Layer.
   c. Session Layer. d. Presentation Layer.

6. Layer that are used to deal with mechanical and electrical specifications are
   a. Physical Layer b. Data Link Layer
   c. Network Layer d. Transport Layer

7. A network with bandwidth of 10 Mbps can pass only an average of 12,000 frames per minute with each frame carrying an average of 1000 bits. Throughput of the network is.....
   a. 0.1 Mbps. b. 0.2 Mbps. c. 0.3 Mbps. d. 0.4 Mbps.

8. What is the transmission time for a 5 Megabyte message if the bandwidth of the network is 1 Mbps? Assume that the distance between the sender and the receiver is 12,000 km and the light travels at 2.4×10^8 ms^{-1}?
   a. 1 sec b. 10 sec c. 20 sec d. 40 sec

9. If a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with 4 signal levels maximum Bit rate would be _____
   a. 10 Kbps b. 12 Kbps c. 14 Kbps d. 16 Kbps

10. Which one of the following is not a function of network layer?
    a. Routing.
    b. Inter-Networking.
    c. Congestion Control.
    d. Node to Node Communication.

11. The only address in the block 127.0.0.0/8 is called the .....address.
    a. Limited-broadcast b. Loopback c. Private d. Multicast

12. The first address of a given IP address 223.15.18.17/28 is .....
    a. 223.15.18.0 b. 223.15.18.6 c. 223.15.18.16 d. 223.15.18.32

13. The last address of a given ip address 223.15.18.17/28 is .....
    a. 223.15.18.0 b. 223.15.18.16 c. 223.15.18.31 d. 223.15.18.37

14. For the IP address 223.15.18.17/27, the number of addresses in the block are
    a. 16 b. 32 c. 64 d. 128

15. The IP address denoted by binary value 11000001 10000011 00011011 11111111 represents
    a. Class A b. Class B c. Class C d. Class D

16. The IP address 145.16.14.28 belongs
    a. Class A b. Class B c. Class C d. Class D

17. Port Number 80 belongs to ..... application
    a. FTP b. Telnet c. SMTP d. HTTP

18. The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called
    a. Piggybacking b. cyclic redundancy check
    c. fletcher's checksum d. parity

19. In asymmetric key cryptography, the private key is kept by
    a. sender
    b. receiver
    c. sender and receiver
    d. all the connected devices to the network

20. We use Cryptography term to make them secure and immune to
    a. Change b. Idle c. Attacks d. Defend

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2018

MAR 0 8 2018

Level : B.Sc.
Year : II
Time : 2 hrs. 30 mins.

Course : COMP 204
Semester: II
F.M. : 40

SECTION "B"
[6 Q.×4 = 24 marks]

Attempt any SIX questions.

1. Explain different data flow mechanism between simplex, half-duplex and full duplex communication mode.

2. Explain different propagation methods of unguided signals from source to destination.

3. Explain the framing procedure involved in Character-oriented protocol and Bit-oriented Protocol.

4. What do you understand by the term Hamming Distance, explain with suitable example? Find the redundant bits using hamming code for the 7 bit message 1001011. [1+3]

5. Explain Dijkstra's Algorithm, which is used for computing the route from one node to another.

6. Why Transport layer is considered as process to process communication? Explain three way handshake mechanism of TCP protocol with clear flow diagram. [1+3]

7. Write short notes on [2×2=4]
   a. Advantages and Limitations of Bus Topology.
   b. HTTP

SECTION "C"
[2 Q.×8 =16 marks]

Attempt any TWO questions.

8. a. Explain OSI Reference Model in brief. [4]
   b. Explain CRC Error Detection Algorithm with the help of sufficient example. [4]

9.a. Describe different scenario of security attacks and threats than can happen in any network. Explain procedure of private key cryptography in detail. [1.5+2.5]
   b. A pure ALOHA network transmits 200 bit frames on a shared channel of 200 kbps. What is the throughput if the system produces? [2×2=4]
      i. 1000 frames per second.
      ii. 500 frames per second.

10. An ISP is granted block of addresses starting with 188.88.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows:
    a. The first group has 50 customers, each need 256 addresses.
    b. The second group has 200 customers, each need 32 addresses.
    c. Design the sub-blocks and find out how many addresses are still available after these allocations. [3+3+2]