TRIBHUVAN UNIVERSITY
Faculty of Management, Office of the Dean
BIM 2nd Semester Examination 2003
Subjective Question / ITC 214: Data Communication & Computer Network

Full Marks: 50
Time : 2 hours 40

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

Attempt any FIVE questions.

1. a. How is dynamic routing different from static routing What is the major disadvantage of flooding ? How is the overcome?
   b. List the types (characteristics) of services provided by the TCP to the application layer.[2]
   c. Explain how go- back –n sliding window protocol achieves flow control and error control? [2]
2. a. What do these terms refers to when it comes to IPv4 header:
   Flags, Fragment Offset, Source Address, Time to live [2]
   b. Assume a situation in which you are chatting with your friend in the US through the Internet. Draw the model of the communication system, which supports this. Identify the different elements involved in the system and list their functions. [3]
   c. What is the 32-bit binary equivalent of the IP address 223.1.3.27? What is the default subnet mask for this IP address? [1]
3. a. Your organization requires 5 subnets for the IP address 192.223.5.28. Define the subnet mask and calculate how many hosts can be connected to each other? [1]
   b. How do you compare the OSI and TCP/IP MODELS? Draw the models and name different layers in each model.[4]
   c. Define the following terms with suitable examples:
   i. Signal bandwidth ii. Noise [1]
4. a. For the data sequence 110010 draw the signal waveforms when they are encoded using: [3]
   State any assumption made .
   i. NRZ-L ii. NRZ-I iii. Manchester
   iv. ASK v. PSK vi. FSK
   b. What do you mean by digital transmission? What are the advantages of digital transmission over analog transmission? Any disadvantages? [3]
5. a. List and define the different types of services provided by the data link layer to the network layer in the OSI reference model. [2]
   b. A system uses ARQ for error control using CRC. The message sequence is 1101011011 and the generator polynomial $G(x) = x^4 + x + 1$.(10011) Determine the transmitted frame. How does the receiver detect an error? [2]
   c. How do you specify an Ethernet cable? List all possible cables with their characteristics such as cable type, maximum segment length, date rate etc. [2]
6. a. With a neat diagram explain the operation and feature of the IEEE 802.5. [3]
   b. Different switching techniques have been developed to suit a particular type of traffic. Explain the operation and features of switching technique used in telephone networks. [3]

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Full Marks:10 [0.5*20]
Time : 20 Minutes

Tick mark(√) the best answer choice.

1. Which component of the communication system generates the data to be transmitted through the system?
   a. destination b. transmitter c. channel d. information source
2. A set of computers is distributed over a distance of 500m through a net work. The network is most likely to be a
   a. LAN b. MAN c. WAN d. PSTN
3. A voice signal has frequency components spread over the range from 300Hz to 3400Hz. The bandwidth of the signal is
   a. 300Hz b. 3400Hz c. 3100Hz d. 4KHz
4. Which of the following line coding scheme uses three voltage levels?
   a. NRZ – L b. NRZ –I c. AMI d. Manchester
5. Which of the following layers are considered as end-to-end layers in the OSI model?
   a. transport b. data ink c. application d. both a and c
6. The internet layer of the TCP/IP protocol suite provides

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a. connection oriented b. connectionless c. both a and b d. reliable services

7. Which of the following services does the data link layer provide to the network layer in the OSI model?
   a. connection oriented b. connectionless
   c. acknowledged d. all of the above
8. When a parity bit is used for error detection, it can detect
   a. all single bit errors b. all odd number of bits in error
   c. all double bit errors d. a and b only
9. The efficiency of the slotted ALOHA is _____that of pure ALOHA
   a. equal to b. greater than c. less than
10. Which of the medium is not being used by IEEE 802.3?
    a. coaxial cable b. wireless c. twisted pair d. optical fiber
11. A telephone system uses
    a. circuit switching b. store-and-forwarding switching c. packet switching
12. Which of the following routing algorithm is likely to produce congestion in the network?
    a. Fixed path b. Shortest path c. flooding d. Link state
13. The default subnet mask for a class C IP is
    a.255.0.0.0 b. 255.25.0.0 c. 255.255.255.0 d. 255.255.255.1
14. The transport layer in the TCP/IP protocol suite can provide _____ service.
    a. reliable b. unreliable c. connectionless d. all of the above e. only b and c
15. DNS converts
    a. domain name to IP address b. IP address to MAC address
    c. logical address to physical address d. all of the above
16. WWW is a
    a. network b. protocol c. repository of huge information d. network reference model
17. SMTP stands for _____
    a. Simple mail transfer protocol
    b. Single mail transfer protocol
    c. Simple message transfer protocol
    d. Single message transfer protocol
18. Within the Internet, e-mail is delivered by using which of the following protocol?
    a. SMTP b. HTTP c. FTP d. SNMP
19. Which of the following IP class provides the highest number of hosts per network?
    a. Class A b. Class B c. Class C d. Class D
20. Which of the flow control protocol requires the highest amount of buffer in the receiver?
    a. stop-and-wait b. selective-repeat c. go-back-n
    d. buffer requirement is independent of the flow control protocol

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