Total number of printed pages–4

4 SEM BCA (CBCS) DCCN 3

2019

(June)

COMPUTER APPLICATION

Paper : 4·3

(Data Communication and Computer Network)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. *(a)* Distinguish between baseband transmission and broadband transmission. We modulate several voice signals and send them through the air. Is this, baseband or broadband transmission ? Justify. 2+2=4

   (b) What is the length of a bit in a channel with a propagation speed of $2 \times 10^8 m/s$ if the channel bandwidth is $2Mbps$? 2

Contd.

OR

(c) What is the bit rate for a signal in which 2 *bit* lasts 0.001*s*? 2

(d) Compare and contrast *any one* of the following : 4

(a) Synchronous and asynchronous transmission modes with suitable examples.

(b) Frequency Division Multiplexing and Time Division Multiplexing.

(e) What is the difference between omnidirectional waves and unidirectional waves? Briefly explain parabolic dish antenna and horn antenna. 2+2=4

2. (a) What are the two approaches of Packet switching? How delay occurs in Virtual switching? 2+2=4

OR

(b) Define blocking in a switched network. 4

(c) What is the Hamming distance for each of the following codewords? 2

(a) d (10000, 01000)

(b) d (10101, 10010)

(d) What is the role of redundancy in error detection and correction? 2

(e) What is Hamming distance? What kind of error is undetectable by the checksum? 2+2=4

(f) What are global addressing and local addressing in virtual circuit switching? 2

OR

(g) Briefly explain the connection setup phase of circuit switching. 2

3. (a) What is a routing protocol? How intradomain routing differs from interdomain routing? 2+2=4

(b) Briefly explain the Two-node loop instability problem in Distance vector routing. How this problem can be solved using Split Horizon concept? 2+2=4

OR

(c) How LSPs are created and flooded in Link-state routing? 2+2=4

(d) How unicast routing differs from multicast routing? 3

(e) What are the functionalities of transport layer in OSI reference model? 2

OR

(f) What are the functionalities of network layer of OSI model? 2

(g) How connectionless service differs from connection-oriented service? 3

(h) Compare the user datagram segment format with TCP segment format. 3+3=6

OR

(i) Compare the features of TCP with the features of UDP. 3+3=6

4. (a) Define cryptography. Briefly explain symmetric key cryptography algorithm with suitable example. 2+3=5

OR

(b) Compare substitution cipher and transposition cipher with suitable example. 5

(c) Briefly describe ***any one*** of the following: 5

(a) Email

(b) Network virtual terminal

(c) Remote printer access.
