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311503

Dec. 2021

BCA Vth SEMESTER

Data Communication and Networking (BCA-17-303)

Time : 90 Minutes] [Max. Marks : 25

Instructions :

1. *It is compulsory to answer all the questions (1 mark each) of Part-A in short.*
2. *Answer any three questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology? (1)

(b) Explain the advantages of a multipoint connection over a point-to-point connection. (1)

(c) List the difference between a port address, a logical address, and a physical address. (1)

(d) Differentiate between bit rate and baud rate. (1)

(e) How does a VLAN provide extra security for a network? (1)

(f) Differentiate between piconet and scatternet. (1)

(g) Define piggybacking. (1)

(h) Name the advantages of optical fiber over twisted-pair and coaxial cable. (1)

(i) Differentiate between a circuit-switched network and a packet-switched network. (1)

(j) An address space has a total of 1024 addresses. How many bits are needed to represent an address? (1)

PART - B

2. Briefly explain the layered architecture of OSI reference model. (5)

3. (a) Explain with suitable diagram, how synchronous and asynchronous transmissions are used for data communication? (3)

(b) Describe how TDM handle disparity in the input data rate, if data rates of all input lines are not same? (2)

4. (a) Illustrate the working of CSMA/CA using suitable flowchart. (3)

(b) Compare and contrast the Go-Back-N ARQ Protocol with Selective-Repeat ARQ. (2)

5. (a) Given the dataword 1010011110 and the divisor 10111. Show the generation of the codeword at the sender site using CRC method (using binary division). (3)

(b) Why is there no need for CSMA/CD on a full-duplex Ethernet LAN? (2)

6. (a) In a block of addresses, we know the IP address of one host is 182.44.82.16/26. What are the first address (network address) and the last address in this block? (2)

(b) Explain Diffie-Hellman algorithm used in Asymmetric Key Cryptography. (3)