CBCS SCHEME

18MCA24

Second Semester MCA Degree Examination, June/July 2019
Computer Networks

Time: 3 hrs.   Max. Marks: 100

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. Explain OSI network architecture, with neat diagram.   (10 Marks)
    b. Describe links, nodes and clouds with help of diagram.   (06 Marks)
    c. Explain working of FDM, with its limitations.   (04 Marks)

OR

2   a. Briefly explain applications of computer networks.   (06 Marks)
    b. Explain following ides with respect to network architecture: layering, protocol, encapsulation, multiplexing and demulitplexing.   (10 Marks)
    c. Consider a point-to-point link 50km in length. At what bandwidth would propagation delay (at a speed of 2×10^8 m/sec) equal transmit delay for 100 byte packets.   (04 Marks)

Module-2

3   a. Apply NRZ, NRZI, Mrnchester encoding to the following bit stream
       1 0 0 1 1 1 0 0 1 0 1 0 0   (06 Marks)
    b. Explain Byte-oriented framing protocols.   (08 Marks)
    c. Explain the feature of WiFi.   (06 Marks)

OR

4   a. Suppose we want to transmit the message 1 1 0 0 1 0 0 1 and protect it from errors using CRC8 polynomial : $x^3 + 1$
       i) Use polynomial long division to determine the message that should be transmitted.
       ii) Suppose the left most bit is inverted due to the noise on transmission link for the above message. What is the result of receivers CRC calculation? How does the receiver know that an error has occurred?   (10 Marks)
    b. Explain the concept of stop and wait protocol with necessary diagrams for different scenario.   (10 Marks)

Module-3

5   a. Explain the working virtual circuit with the help of VC table.   (10 Marks)
    b. Define spanning tree algorithm and explain how it works.   (10 Marks)

OR

6   a. Explain IPv$_4$ packet headers format with neat diagram.   (08 Marks)
    b. Describe ARP protocol with its working.   (06 Marks)
    c. What is CIDR? How it overcomes the problem of class full addressing?   (06 Marks)

Module-4

7   a.   What are key characteristics of UDP?   **(05 Marks)**
     b.   Explain UDP datagram format.   **(05 Marks)**
     c.   Explain three-way hand shakes for connection establishment and termination respectively for TCP with diagram.   **(10 Marks)**

OR

8   a.   Briefly explain the mechanisms used for TCP congestion control.   **(10 Marks)**
     b.   Explain source-based congestion avoidance mechanism.   **(10 Marks)**

Module-5

9   a.   Explain Ciphers, symmetric-key ciphers and public-key ciphers with respect to cryptographic security.   **(10 Marks)**
     b.   What are firewalls? Explain strengths and Weaknesses of firewalls.   **(10 Marks)**

OR

10   a.   Explain SMTP along with message format.   **(10 Marks)**
     b.   Write a brief note on Domain Name System (DNS).   **(10 Marks)**

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