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NMCAE14

PAPER ID : 214435

Roll No.

M. C. A.

(SEM. IV) THEORY EXAMINATION, 2014-15
COMPUTER NETWORKS

Time : **3** Hours]   [Total Marks : **100**

Note :   Attempt all questions. All questions carry equal marks.

1   **Attempt any four parts of the following :**   **5×4=20**

   (a)   Describe the TCP/IP protocol suite in brief.

   (b)   What does the Nyquist theorem have to do with communication ?

   (c)   Define as switch. List the three conventional switching methods.

   (d)   List the layers of the Internet model.

   (e)   What do you understand by network topology ? Compare and contrast different network topologies used in LAN.

   (f)   Explain baud rate with a suitable example. If a binary signal is sent over a 30 kHz channel whose signal-to-noise ratio is 20 dB. What is the maximum achievable data rate ?

214435]   **1**   **[Contd...**

2   **Attempt any two parts of the following :**   **10×2=20**

   (a)   Answer each question :

        (i)   What is IEEE 802.11 standard ?

        (ii)   Compare and contrast CSMA/CD with CSMA/CA.

   (b)   Which of the following CRC generators guarantee the detection of a single bit error ?

        (i) $x + 1$

        (ii) $x^2 + 1$

   (c)   Answer each question :

        (i)   How does the Ethernet address 1A : 3B : 4C : 6D : 2E : IF appear on the line binary ? Explain.

        (ii)   Define and explain the type of the following destination address : FF:FF:FF:FF:FF:FF

3   **Attempt any two parts of the following :**   **10×2=20**

   (a)   Describe and compare the following two approaches to congestion handling :

        (i)   The token bucket algorithm

        (ii)   Hop-by-hop choke packets

   (b)   A computer on a 6-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps ?

   (c)   Describe hamming code. How it is used for error detection and correction ? Illustrate with the help of a suitable example.

4   **Attempt any two parts of the following :**   **10×2=20**

   (a)   What is UDP ? What is the maximum and minimum size of a UDP datagram ? Also discuss the use of UDP.

   (b)   The following is the dump of a TCP header in hexadecimal format :

         05320017   00000001   00000000   500207FF 00000000

         (i)   What is the sequence number ?

         (ii)   What is the destination port number ?

         (iii)   What is the acknowledgment number ?

         (iv)   What is the window size ?

   (c)   What is cryptography ? Differentiate between symmetric key cryptography and asymmetric-key cryptography.

5   **Attempt any two parts of the following :**   **10×2=20**

   (a)   Discuss the following :

         (i)   RSA Algorithm

         (ii)   Transport Layer Security

   (b)   What is MIME ? Explain standard content-Types of MIME in detail.

   (c)   Write short notes on any of the following :

         (i)   FTP

         (ii)   IP Sec

         (iii)   VDN