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13MCA31

Third Semester MCA Degree Examination, Dec.2016/Jan.2017
Computer Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. What is a Computer Network?
Define the terms: i) Switch ii) Router iii) Hub. **(05 Marks)**

b. Discuss the classification of computer networks and write the difference between broad casting and multicasting. **(05 Marks)**

c. Discuss the responsibilities of each layer in OSI reference model. **(10 Marks)**

2 a. A channel capacity is intended to be 20Mbps, bandwidth allocated is 3MHz. To achieve this capacity compute the SNR required. **(04 Marks)**

b. Describe the characteristics of twisted pair cable and optical fiber cable in detail. **(06 Marks)**

c. Illustrate Nyquist bandwidth and Shannon capacity formula. **(10 Marks)**

3 a. Suppose we want to transmit the message 1101011011 and protect it from errors using CRC8 polynomial $x^4 + x + 1$.
i) Use polynomial long division to determine the message that should be transmitted.
Suppose the left most bit is inverted due to the noise on transmission link on the above message. What is the result of receivers CRC calculation? How does the receiver know that are error has occurred? **(10 Marks)**

b. Show the NRZ, NRZ1 and Manchester encoding for the bitpattern 10000101111. **(06 Marks)**

c. Discuss TDMA and CDMA. **(04 Marks)**

4 a. Explain the working of selective repeat sliding window protocol in flow control. **(10 Marks)**

b. Discuss the types of ALOHA collision resolution protocol in detail. **(10 Marks)**

5 a. Give the 802.11 standard frame formats. Explain the fields in detail. **(05 Marks)**

b. Describe the Bluetooth protocol architecture. **(05 Marks)**

c. Describe various Ethernet implementations. **(10 Marks)**

6 a. Describe TCP connection management process with the help of a flow diagram. **(10 Marks)**

b. Explain the working of AODV algorithm for Ad-hoc Networks. **(10 Marks)**

7 a. Discuss IPV4 packet header format. Compare the features of IPV4 and IPV6. **(10 Marks)**

b. Explain leaky bucket and token bucket congestion control algorithm with suitable diagrams. **(10 Marks)**

8 Give a brief note on :

a. DNS **(05 Marks)**

b. SIP and VOIP **(05 Marks)**

c. BGP **(05 Marks)**

d. Streaming audio and video. **(05 Marks)**

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