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10EE843

Eighth Semester B.E. Degree Examination, June/July 2016
Data Communications and Networking

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1 a. Explain the performance of data transmission. **(06 Marks)**

b. With a diagram, explain the functionalities of each layer of a OSI model. **(12 Marks)**

c. Low pass communication has BW of 1 MHz. What is Shannon capacity of channel if SNR is 63 db? What bit rate is attainable using 8–level pulses? **(02 Marks)**

2 a. What is line coding? Explain the features of Biphase scheme by representing the following bit sequence, 10011101. **(08 Marks)**

b. Bring out a comparison between polar – RZ and AMI line coding schemes with an example. **(06 Marks)**

c. With a neat block diagram, explain the PCM encoder. **(06 Marks)**

3 a. What is TDM? Explain how statistical TDM overcomes the disadvantage of synchronous TDM. **(08 Marks)**

b. With a neat diagram and an example explain BPSK. **(08 Marks)**

c. Two channels, one with a bit rate of 150 kbps and another with 140 kbps are to be multiplexed using pulse stuffing TDM with no synchronization bits. Find :
Data rate ii) size of a frame in bits iii) frame rate iv) duration of a frame. **(04 Marks**

4 a. Give the characteristics of : i) coasial cable ii) fibre optic cable. **(06 Marks)**

b. A bit stream 10011101 is transmitted using CRC method, the generator polynomial is $x^3 + 1$.

c. Determine the actual bit string to be transmitted. **(08 Marks)**

What is check sum? With an example, explain how error detection is performed. **(06 Marks)**

PART – B

5 a. Explain with a neat diagram, go-back n sliding window protocol. **(08 Marks)**

b. Define piggy backing and its usefulness. **(06 Marks)**

c. Suppose you are designing a sliding window protocol for a 1mbps point–to–point link to a stationary satellite revolving around the earth at 3×10^8 km altitude. Assuming that each frame carries 1 kb of data, what is the minimum number of bits you need for the sequence number in the following cases? i) RWS = 1 ii) RWS = SWS. Assume the speed of light as 3×10^8 m/s. **(06 Marks)**

6 a. Explain with a flow diagram. the working of CSMA/CD. **(08 Marks)**

b. Describe frame format for IEEE 802.3 MAC frame. What are the salient features of fast Ethernet? **(06 Marks)**

c. Write short notes on : i) Repeaters ii) brides iii) routers. **(06 Marks)**

7 a. Describe MAC layers in IEEE 802.11 std. **(08 Marks)**

b. Describe Bluetooth architecture. **(08 Marks)**

c. How does VLAN reduce network traffic? **(04 Marks)**

8 a. With a neat diagram, describe ARM architecture. **(08 Marks)**

b. Explain the architecture of SONET system. **(06 Marks)**

c. Describe STS–1 frame in detail. **(06 Marks)**

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