ROLLNO...................
2008 JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY
B.TECH COMPUTER SCIENCE & ENGINEERING
COMPUTER NETWORKS
MAY 2008

TIME:3 HOUR
MARK:80

ANSWER ALL THE QUESTIONS

1. What is the thermal noise level of a channel with bandwidth of 10kHz carrying 1000 watts of power operating at 50 °C.

2. Suppose that the spectrum of a channel is between 3 MHz and 4 MHz and SNR=24 dB. Find out Shannon capacity for noisy channel. What levels are required if this capacity is used for noiseless channel.

3. For a parabolic reflective antenna with a diameter of 2 m, operating at 12 GHz what is the effective area and the antenna gain?

4. Find out the maximum distance between two antennas for LOS transmission if one antenna is 100 m high and other is at ground level. Now suppose that the receiving antenna is 10 m high. To achieve the same distance, how high must the transmitting antenna be?

5. What is differential encoding? Differentiate between NRZ-L and NRZ-I.

6. Five channels, each with a 100-KHz bandwidth, are to be multiplexed together. What is the minimum bandwidth of the link if there is a need for a guard band of 10 KHz between the channels to prevent interference?

7. What is synchronizing? We have four sources, each creating 250 characters per second. If the interleaved unit is a character and 1 synchronizing bit is added to each frame, find (1) the data rate of each source, (2) the duration of each character in each source, (3) the frame rate, (4) the duration of each frame, (5) the number of bits in each frame, and (6) the data rate of the link.

8. Define the term bit-padding. Two channels, one with a bit rate of 100 Kbps and another with a bit rate of 200 Kbps, are to be multiplexed. How this can be achieved? What is the frame rate? What is the frame duration? What is the bit rate of the link?

9. Describe QAM and PSK with an example.

10. Differentiate between terrestrial microwave and satellite microwave.

11. What is line of sight transmission? Where does it use?

12. Define a Manchester and differential Manchester encoding with an example For the bit stream 01001110, sketch the waveform for following encoding techniques

(a.) NRZ-L

(b.) NRZ-I

(c.) Manchester Encoding

(d.) Differential Manchester

(e.) Bipolar AMI

(f.) B8ZS and HDB3

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