BHARATI VIDYAPEETH INSTITUTE OF TECHNOLOGY

QUESTION BANK

Question Bank (K - Scheme)

Name of subject: Digital communication system **Unit Test**: I

Subject code: 314326 Program: EJ

Semester: IV

Unit 1 Digital communication system and coding methods (18 Marks)

2 Marks Questions

1. State advantages & disadvantages of digital communication.
2. State Shannon Hartley's theorem for channel capacity.
3. Define i)Bit rate ii) Baud rate.
4. Define a) Entropy b)Rate of information.
5. Define Line coding .give classification of line coding.
6. Calculate number of errors detected and corrected if hamming distance is 8.
7. Define a) Hamming weight b) Hamming distance.

4 Marks Questions

1. Draw the block diagram of digital communication system and state the function of source encoder and channel encoder.
2. Compare any four channel with help of following parameter 1.type of channel 2.repeater distance 3 bit rate or band width 4 application
3. Using Shannon Hartley's theorem calculate channel capacity for the channel having band width 10khz and signal to noise ratio 20 db.
4. A discrete memory less source has five message symbols A,B,C,D,E with probabilities 0.4,0.2,0.2,0.1 and0.1respectively derive Huffman code for above source and find average length and coding efficiency of code word.
5. List various error detection methods .explain any one in detail with example.
6. Describe parity checking method with example. list limitations of this methods.
7. List steps involved in creating checksum
8. Describe the working of CRC generator and checker with block diagram.
9. Generate CRC code word for the data bits 110010101 and the divisor is 10101. State its disadvantages

10. Draw the waveforms for a binary sequence 10110011 for following signal codes. 1 polar RZ .2 unipolar NRZ . 3 split phase Manchester. 4 polar quaternary.
11. Draw the waveforms for a binary sequence 10101101 for following signal codes. 1 polar NRZ .2 bipolar AMI (RZ). 3 differential Manchester 4 polar quaternary.
12. Encode the data bits 1110 in to a seven bit even parity hamming code
13. Encode the data bits 1010 in to a seven bit odd parity hamming code.
14. If the 7- bit hamming code word received by a receiver is 1011011. Assuming even parity check received code word if wrong write correct code word.

Unit 2 PULSE CODE MODULATION TECHNIQUES (16 MARKS)

2 Marks Questions

1. State the sampling theorem and nyquist rate.
2. Define sampling and list its types.
3. Define quantisation and quantisation noise.
4. What is companding ? Draw companding curve.
5. Compare PCM and DPCM.
6. Define aliasing effect with diagram.

4 Marks Questions

1. Draw block diagram of pcm transmitter; state the function of each block.
2. If $x(t)= 3\cos(50\pi t)+10 \sin(300 \pi t)- \cos (100 \pi t)$. Calculate the nyquist rate and nyquist interval for this signal
3. List advantages of pcm and states it's application.
4. Describe the working of Delta modulator with block diagram and waveforms.
5. Describe the working of DM receiver with block diagram.
6. Describe slope overload error and granular noise present in DM with waveforms.how to overcome this.
7. List advantages and disadvantages of DM.
8. Describe the working of ADM with block diagram and waveforms.
9. Compare PAM,PWM,PPM.
10. State the need of DPCM? And function of predictor.
11. Draw DPCM transmitter and receiver.
12. Draw block diagram of PWM modulator. state the function of each block with waveform
13. Describe quantisation process with waveforms.
14. Draw block diagram of PPM modulator. state the function of each block with waveform
15. Compare pulse code modulation with continuous wave modulation.