B.E.(with Credits)-Regular-Semester 2012-Electronics & Telecommunication / Communication Engineering Sem VII

ET - Digital Communication

P. Pages : 2 **GUG/S/18/6577**

Time : Three Hours * 2 0 7 3 * Max. Marks : 80

Notes : 1. All questions carry marks as indicated.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.

1. A) With the help of block diagram explain digital communication. **8**

B) Differentiate between analog and digital communication. **8**

OR

2. A) What are the advantages of digital communication. Also write down its disadvantages. **8**

B) State and explain the following theorems with digital system. **8**

i) Parseval's Energy theorem.

ii) Rayleigh's Energy theorem.

3. A) A 6 bit single channel PCM system gives an output of 60 kilo-bits per second. Determine the highest possible modulating frequency for the system. **8**

B) For Linear quantization, derive quantization Noise and signal to noise ratio. **8**

OR

4. A) 24 telephone channels, each bandlimited to 3.4 KHz, are to be time division multiplexed by using PCM. Calculate the bandwidth of the PCM system for 128 quantization levels and an 8 KHz sampling frequency. **8**

B) Write and explain briefly different type of Quantizers. **8**

5. A) Describe Delta modulation systems. What are its limitations? How can they be overcome. **8**

B) Describe matched filter in detail. **8**

OR

6. A) Derive an expression for impulse response and peak pulse signal to noise ratio of matched filter receiver. **8**

B) Derive an expression for error probability of Matched filter. **8**

7. A) Explain frequency shift keying. Describe coherent detection of FSK signals. What should be the relationship between bit-rate and frequency shift for a better performance. **8**

B) Explain PSK and DPSK; compare the two. **8**

OR

8. A) Explain with neat block diagram, transmission and reception of QPSK. **8**

B) Derive an expression for probability of error in ASK. **8**

9. A) What are the features of TDMA. **8**

B) What are the different types of modulation techniques. Compare between them. **8**

OR

10. A) Describe Time Division multiplexing (TDM) system. and explain **8**
i) Frame ii) Signaling rate
iii) Transmission Bandwidth

B) Draw a block diagram of a PAM/TDM system and explain its working principle. **8**

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