

1. What is the “Capture Effect”? What will happen if the unwanted FM signal is equal or stronger than the desired FM signal at the FM receiver?
2. Please give a briefly description of the “Nyquist rate”?
- 3.

Given the data stream 1110010100, sketch the transmitted sequence of pulses for each of the following line codes:

- (a) Unipolar nonreturn-to-zero
- (b) Polar nonreturn-to-zero
- (c) Unipolar return-to-zero
- (d) Bipolar return-to-zero
- (e) Manchester code

4.

A PCM system uses a uniform quantizer followed by a 7-bit binary encoder. The bit rate of the system is equal to 50×10^6 b/s.

- (a) What is the maximum message bandwidth for which the system operates satisfactorily?
- (b) Determine the output signal-to-(quantization) noise ratio when a full-load sinusoid modulating wave of frequency 1 MHz is applied to the input.