

Experiment–10

Aim:	
To generate modulate and demodulate amplitude shift key (ASK signal) using MATLAB.	
Description:	
MATLAB software with essential configurations.	
Theory:	
Pulse Amplitude Modulation (PAM) is a digital modulation technique where the amplitude of a series of pulses is varied in accordance with the amplitude of an analog signal being transmitted. In PAM, each sample of the analog signal is represented by a corresponding pulse amplitude. The process involves sampling the analog signal at regular intervals and quantizing each sample to a discrete amplitude level. These quantized samples then modulate a train of pulses, where the amplitude of each pulse corresponds to the amplitude of the quantized sample.	
Code:	
1	<i>%to generate modulate and demodulate amplitude shift key(ASK signal) using</i>
2	<i>%matlab essential software with communication tool box</i>
3	clc;
4	clear all;
5	close all;
6	Tb = 1;
7	fc = 10;
8	t=0:Tb/100:1;
9	c=sqrt(2/Tb)*sin(2*pi*fc*t);
10	N=8;
11	m=rand(1,N);
12	t1=0;
13	t2=Tb;
14	for i=1:N
15	t=[t1:.01:t2]
16	if m(i)>0.5
17	m(i)=1;
18	m_s=ones(1,length(t));
19	else
20	m(i) = 0;
21	m_s = zeros(1,length(t));
22	end
23	message(i,:)=m_s;
24	ask_sig(i,:)=c.*m_s;
25	t1 = t1+(Tb + 0.1);
26	t2 = t2 + (Tb+0.1);
27	subplot(5,1,2);
28	axis([0 N -2 2]);
29	plot(t,message(i,:), 'r');

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30     hold on
31     subplot(5,1,4);
32     plot(t,ask_sig(i,:));
33     hold on
34 end
35 hold off
36 subplot(5,1,3);
37 plot(t,c);
38 sgtitle('Sujal Singh (04119051723)')

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Output:

