clc;

clear all;

close all;

Tb=1;

t=0:(Tb/100):Tb;

fc=1;

c1=sqrt(2/Tb)\*cos(2\*pi\*fc\*t);

c2=sqrt(2/Tb)\*sin(2\*pi\*fc\*t);

N=8;

m=rand(1,N);

t1=0;

t2=Tb;

for i=1:2:(N-1)

t=[t1:(Tb/100):t2]

if m(i)>0.5

m(i)=1;

m\_s=ones(1,length(t));

else

m(i)=0;

m\_s=-1\*ones(1,length(t));

end

odd\_sig(i,:)=c1.\*m\_s;

if m(i+1)>0.5

m(i+1)=1;

m\_s=ones(1,length(t));

else

m(i+1)=0;

m\_s=-1\*ones(1,length(t));

end

even\_sig(i,:)=c2.\*m\_s;

qpsk=odd\_sig+even\_sig;

subplot(3,2,4);

plot(t,qpsk(i,:));

title('QPSK signal');

xlabel('t---->');

ylabel('s(t)');

grid on;

hold on;

t1=t1+(Tb+.01);

t2=t2+(Tb+.01);

end

hold off

subplot(3,2,1);

stem(m);

title('binary data bits');

xlabel('n---->');

ylabel('b(n)');

grid on;

subplot(3,2,2);

plot(t,c1);

title('carrier signal-1');

xlabel('t---->');

ylabel('c1(t)');

grid on;

subplot(3,2,3);

plot(t,c2);

title('carrier signal-2');

xlabel('t---->');

ylabel('c2(t)');

grid on;

t1=0;

t2=Tb;

for i=1:N-1

t=[t1:(Tb/100):t2]

x1=sum(c1.\*qpsk(i,:));

x2=sum(c2.\*qpsk(i,:));

if (x1>0&&x2>0)

demod(i)=1;

demod(i+1)=1;

elseif (x1>0&&x2<0)

demod(i)=1;

demod(i+1)=0;

elseif (x1<0&&x2<0)

demod(i)=0;

demod(i+1)=0;

elseif (x1<0&&x2>0)

demod(i)=0;

demod(i+1)=1;

end

t1=t1+(Tb+.01);

t2=t2+(Tb+.01);

end

subplot(3,2,5);

stem(demod);

title('qpsk demodulated bits');

xlabel('n---->');

ylabel('b(n)');

grid on;