clc

clear all

close all

%--- datos ---

bitstream = '00110100010';

tb = 50;

regla\_bit = 0;

%carrier

Ac = 10;

fc = 1000e3;

phic = 0;

%Regla de modulacion ASK

transmite\_carrier = 1; %VALORES posibles con 1 ó 0

%--- procesos ---

num\_bits = length(bitstream);

tc = linspace(0,num\_bits\*2/fc,num\_bits\*tb+1);

carrier = Ac\*sin(2\*pi\*fc\*tc + phic);

ceros = zeros(1,tb);

unos = ones(1,tb);

cadena = 0;

cadena\_inversa = 0;

for n=1:length(bitstream)

if (bitstream(n)=='1')

cadena = [cadena unos];

cadena\_inversa = [cadena\_inversa ceros];

else

cadena = [cadena ceros];

cadena\_inversa = [cadena\_inversa unos];

end

end

if(regla\_bit == 1)

new\_bitstream = 5\*cadena;

else

new\_bitstream = 5\*cadena\_inversa;

end

titulo = cat(2,'Cadena de bits; ', bitstream);

%Modulacion ASK

if(regla\_bit ==1)&&(transmite\_carrier ==1)

ASK= 5\*cadena.\*carrier;

end

if(regla\_bit ==1)&&(transmite\_carrier ==0)

ASK= 5\*cadena\_inversa.\*carrier;

end

if(regla\_bit ==0)&&(transmite\_carrier ==1)

ASK= 5\*cadena.\*carrier;

end

if(regla\_bit ==0)&&(transmite\_carrier ==0)

ASK= 5\*cadena\_inversa.\*carrier;

end

%Modulacion FSk

tc1 = linspace(0,num\_bits/fc,num\_bits\*tb+1);

tc2 = linspace(0,num\_bits\*4/fc,num\_bits\*tb+1);

delt\_freq = 1000;

FSK\_lf=Ac\*sin(2\*pi\*(fc-delt\_freq)\*tc1+phic);

FSK\_hf=Ac\*sin(2\*pi\*(fc+delt\_freq)\*tc2+phic);

FSK\_alto = 5\*cadena.\*FSK\_hf;

FSK\_bajo = 5\*cadena\_inversa.\*FSK\_lf;

FSK = FSK\_alto+FSK\_bajo;

%Modulacion PSK

PSK\_fase\_0 = 5\*cadena.\*carrier;

PSK\_fase\_180 = -5\*cadena\_inversa.\*carrier;

PSK = PSK\_fase\_0+PSK\_fase\_180;

%--- resultados ---

figure(1)

%stem(cadena)

subplot(4,1,1),plot(new\_bitstream), title (titulo)

axis([0 length(bitstream)\*tb -1 6])

grid on

subplot(4,1,2),plot(tc,carrier), title ('Carrier/Portadora')

subplot(4,1,3),plot(tc,ASK), title ('Señal ASK')

subplot(4,1,4),plot(tc,PSK), title ('Señal PSK')

subplot(5,1,5),plot(tc,FSK), title ('Señal FSK')