CONVOLUTION CODE

A.Transform Domain

syms D

g1=(1+D+D^2);

G1=sym2poly(1+D+D^2); % first generator matrix

syms D

g2=(1+D^2);

G2=sym2poly(1+D^2); % second generator matrix

syms D

m=(D^4+D^1+1);

M=sym2poly(m);

m=length(G1);

n=length(M);

l=length(G2);

X=[G1,zeros(1,n-1)];

H=[M,zeros(1,m-1)];

L=[G2,zeros(1,n-1)];

for i=1:n+m-1

Y1(i)=0;

Y2(i)=0;

for j=1:m

if(i-j+1>0)

a(i)=X(j)\*H(i-j+1);

b(i)=L(j)\*H(i-j+1);

Y1(i)=xor(Y1(i),a(i));

Y2(i)=xor(Y2(i),b(i));

else

end

end

end

Y1 %first encoded seq

Y2 %second encoded seq

OUTPUT:

Y1 =

1 1 1 1 0 0 1

Y2 =

1 0 1 1 1 1 1

B. Time Domain

G1=input('Enter generator matrix one: ');

G2=input('Enter generator matrix two: ');

M=input('Enter message bits: ');

m=length(G1);

n=length(M);

l=length(G2);

X=[G1,zeros(1,n-1)];

H=[M,zeros(1,m-1)];

L=[G2,zeros(1,n-1)];

for i=1:n+m-1

Y1(i)=0;

Y2(i)=0;

for j=1:m

if(i-j+1>0)

a(i)=X(j)\*H(i-j+1);

b(i)=L(j)\*H(i-j+1);

Y1(i)=xor(Y1(i),a(i));

Y2(i)=xor(Y2(i),b(i));

else

end

end

end

Y1 %first encoded sequence

Y2 %second encoded sequence

OUTPUT:

Enter generator matrix one: [1 1 1]

Enter generator matrix two: [1 0 1]

Enter message bits: [1 0 0 1 1]

Y1 =

1 1 1 1 0 0 1

Y2 =

1 0 1 1 1 1 1