ENTROPY AND MUTUAL INFORMATION AND DETERMINATION OF GIVEN CHANNEL

clc;

clear all;

pxy=[0.2 0.1 0.2;0.1 0.1 0.05;0.05 0.1 0.1]; %joint probablity matrix

hx=0; %initalize variables to zero

hy=0; %initalize variables to zero

for i=1:3 %loop to generate 3 rows

px(i)=sum(pxy(i,:)); %Probablity of X input vector P[X]={(px1),(px2),(px3)}

py(i)=sum(pxy(:,i)); %Probablity of Y input vector P[Y]={(py1),(py2),(py3)}

hx=hx-(px(i)\*log2(px(i))); %Entropy of Transmitter

hy=hy-(py(i)\*log2(py(i))); %Entropy of Reciever

end

hxy=0;

for i=1:3;

for j=1:3;

hxy=hxy-pxy(i,j)\*log2(pxy(i,j)); %Joint Entropy

end

end

Hxcy=hxy-hy; %Conditional Entropy H(X/Y)

Hycx=hxy-hx; %H(Y/X)

Ixy=hx-Hxcy; %Mutual Information