**DSP: DCT - IDCT**

**Roll no. 32245 Batch - M6**

**Code:**

%Title: DCT - IDCT

%Roll No. : 32245 Batch: M6

%Name: Pranjal Newalkar

clc;

clear all;

close all;

Xn = input("Enter Input Signal: ");

N = length(Xn);

Xk = zeros(1,N);

alp = zeros(1,N);

alp(1) = sqrt(1/N);

alp(1,2:end) = sqrt(2/N);

for k=1:N

for n=1:N

Xk(k) = Xk(k)+ (alp(k)\*Xn(n)\*cos(((2\*n-1)\*(k-1)\*pi)/(2\*N)));

endfor

endfor

Xk

subplot(2,2,1);

stem(Xk);

ylabel("k")

title("DCT of X(n)")

Xn\_dct = dct(Xn,N)

subplot(2,2,2);

stem(Xn\_dct);

ylabel("k")

title("DCT of X(n) using in built function")

Xki = zeros(1,N);

for n=1:N

for k=1:N

Xki(n) = Xki(n) + (alp(k)\*Xk(k)\*cos(((2\*n-1)\*(k-1)\*pi)/(2\*N)));

endfor

endfor

Xki

subplot(2,2,3);

stem(Xki);

xlabel("Magnitude")

title("IDCT of X(n)")

Xn\_idct = idct(Xk,N)

subplot(2,2,4);

stem(Xn\_idct);

xlabel("Magnitude")

title("IDCT of X(n) using in built function")

