**Digital Signal Processing**

**Matlab Assignment 3**

**Report**

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**Functions Required:**

**Exercise One:**

X[n]={1,-2, 4, 6, -5\*, 8, 10}, \* is zero’th index,

Generate and Plot samples using stem function for sequences:

X1[n] = 3x[n+2]+x[n-4]+2x[n]

X2[n] = x[n+4]\*x[n-1]+x[2-n]-n\*x[n]

**Exercise Two:**

Generate and plot samples of sequences: (0<n<25)

X[n] = n^2[u(n+5)-u(n-6)]+10DELTA(n)+20\*(0.5)^n[u(n-4)-u(n-10)]

**Exercise Three:**

Plot Function in given Figure

**Matlab Instructions & Results:**

**Exercise One:**

>> n=-4:2;

>> x=[1,-2,4,6,-5,8,10];

>> [x11,n11]=sigshift(3\*x,n,-2);

>> [x12,n12]=sigshift(x,n,4);

>> [x13,n13]=sigadd(x11,n11,x12,n12);

>> [x1,n1]=sigadd(x13,n13,2\*x,n);

>> [x21,n21]=sigshift(x,n,-4);

>> [x22,n22]=sigshift(x,n,1);

>> [x233,n233]=sigshift(x,n,-2);

>> [x23,n23]=sigfold(x233,n233);

>> [x211,n211]=sigmult(x21,n21,x22,n22);

>> [x221,n221]=sigmult(x23,n23,x,n);

>> [x2,n2]=sigadd(x211,n211,x221,n221);

>> hold on

>> subplot(2,1,1)

>> stem(n1,x1)

>> subplot(2,1,2)

>> stem(n2,x2)

>> hold off

**Exercise Two:**

>> n=0:25;

>> x1=(n.^2) .\*(stepseq(0,0,25)-stepseq(6,0,25))+(20\*(.5).^n).\*(stepseq(4,0,25)-stepseq(10,0,25));

>> stem(n,x1)

**Exercise Three:**

>> n=linspace(-2,3,5\*100);

>> y1=zeros(1,100);

>> n2=linspace(-1,0,100);

>> y2=1-cos(0.5\*pi\*n2);

>> n3=linspace(0,1,100);

>> y3=n3-1;

>> y=[y1 y2 y3 y1-1 y1];

>> stem(n,y);