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Subject :- Signals and System

Lab Assignment 5

Function used for this is unit function which gives output as unit step function

```
function x = unit(n)
x = n>=0;
end
```

Question 1

```
clc;
close all;
clear all;

%Q1
n = -10:1:10;

r2 = n.*unit(n-2);

r1 = n.*unit(n+1);

r = n.*unit(n);

u4 = unit(n-4);

x = (3.*r2) - (6.*r1) + (3.*r) - (4.*u4);

stem(n,x,"r");
```
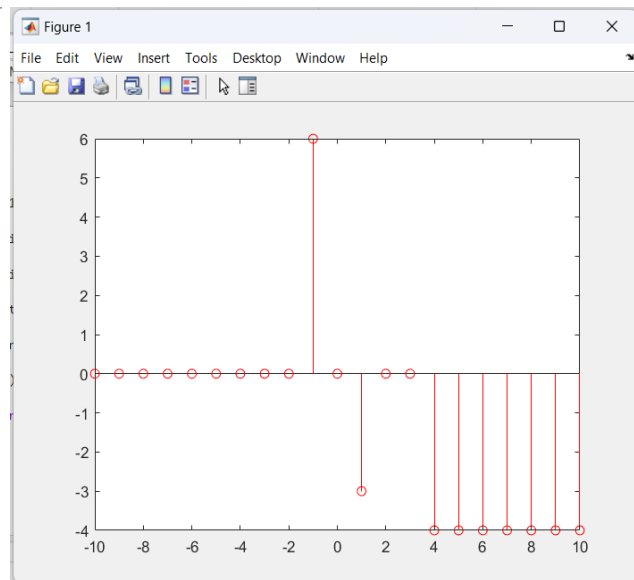

Question 2

```
clc;
close all;
clear all;

%Q2
n0 = -5:1:-1;
x0 = zeros(size(n0));

n1 = 0:1:5;
x1 = -n1 + 10;

n2 = 6:1:8;
x2 = n2;

n3 = 9:1:15;
x3 = zeros(size(n3));
n = -5:1:15;
x = [x0, x1, x2, x3];

stem(n, x);
```
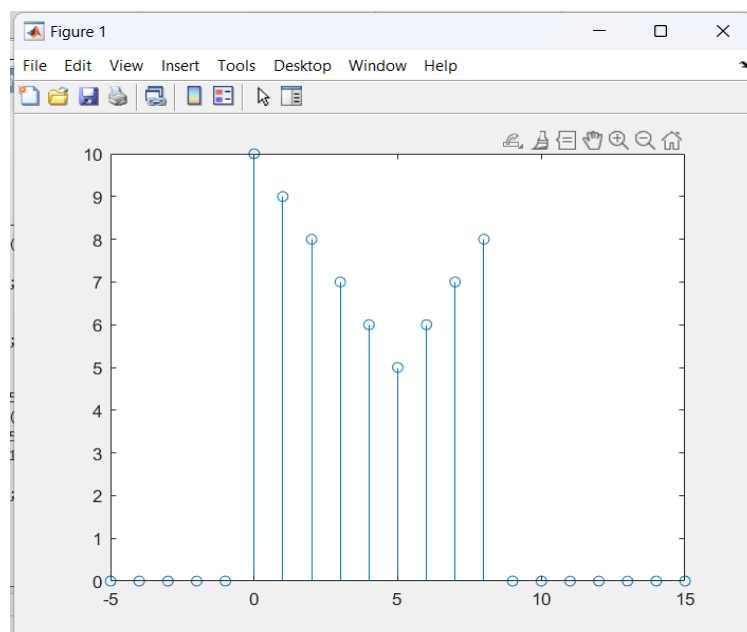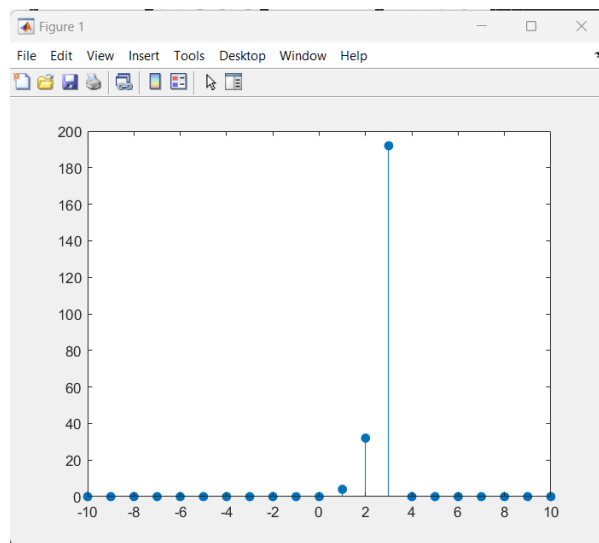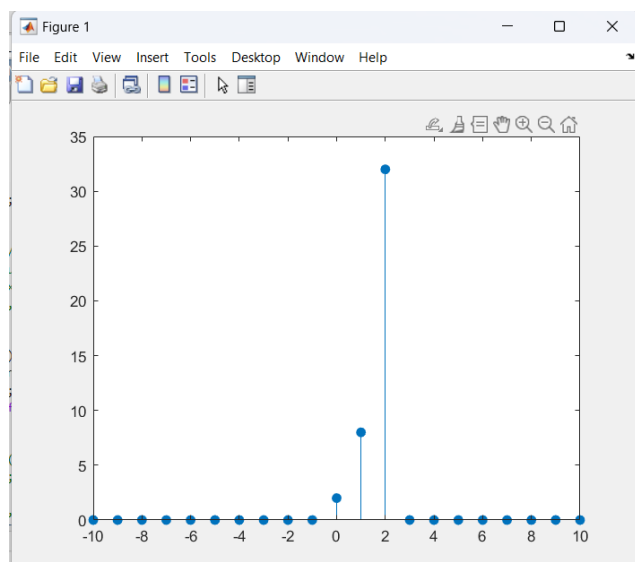
Question 3


```matlab
% a)
x1 = ((1/4).^(-n)).*(unit(n+1)-unit(n-4));
x2 = n.*unit(n);
y = x1.*x2;
stem(n,y,"filled");
```
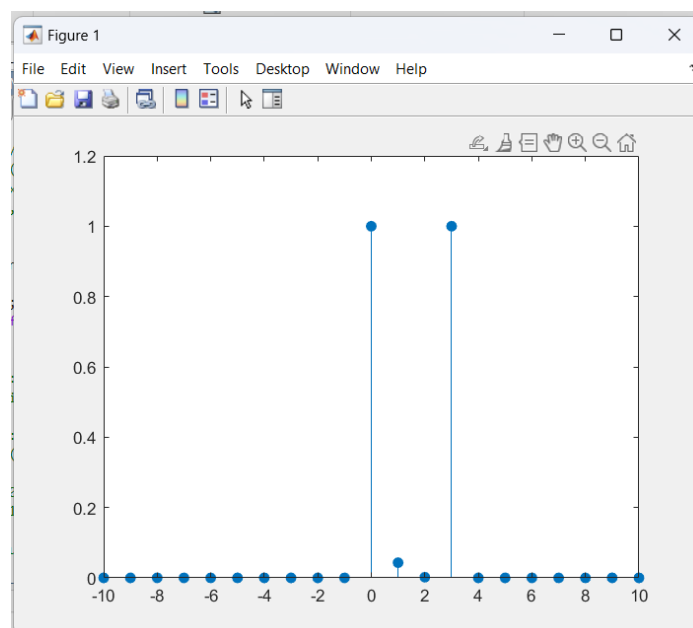a)


```matlab
%b)
x1 = ((1/4).^(-n)).*(unit(n)-unit(-n-4));
x2 = 2.*(unit(n+2) - unit(n-3));
y = x1.*x2;
stem(n,y,"filled");
```
b)


```matlab
x1 = exp(-n.*pi).*unit(n);
h = n==3;
y = x1 + h;
stem(n,y,"filled");
```
c)

```
t1 = -10:1:-1;
x1 = -unit(-t1);

t2 = 1:1:10;
x2 = exp(-t2.*pi).*unit(t2);

x = [x1,0,x2];
t = -10:1:10;

h = (t.*unit(t-3)) + 2;

y = x+h;
```
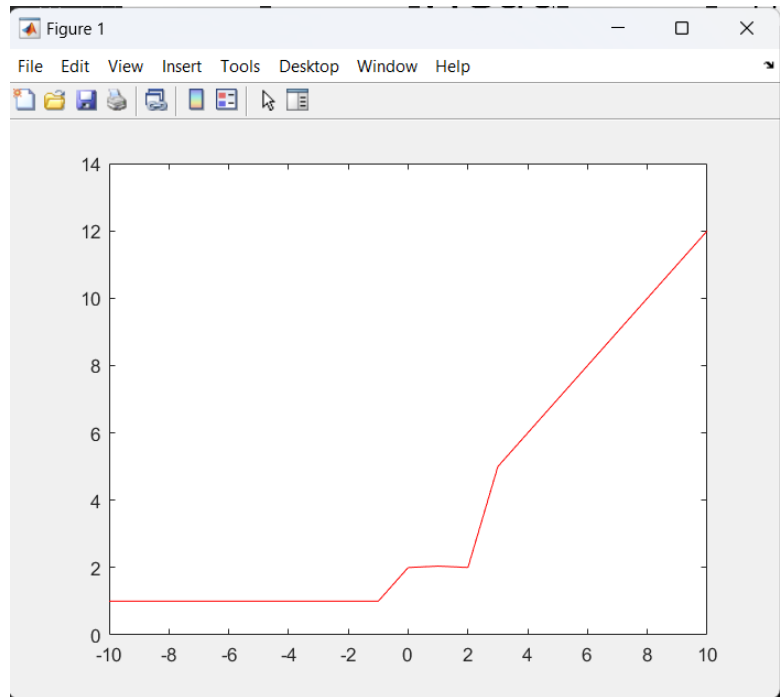
d) `plot(t,y,"r");`


```
t=-10:10;
delta = t==0;

y = (2*t + 1) + ((-t+3).*(unit(t-2)-unit(t-3))) + delta;
```

e) `plot(t,y);`