Lab Report

IA 3203 – DIGITAL SIGNAL PROCESSING

Department of Instrumentation and Automation Technology
University of Colombo

DSP 303 – Linear Time Invariant Systems

Registration No: 2021t01108

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Exercise:

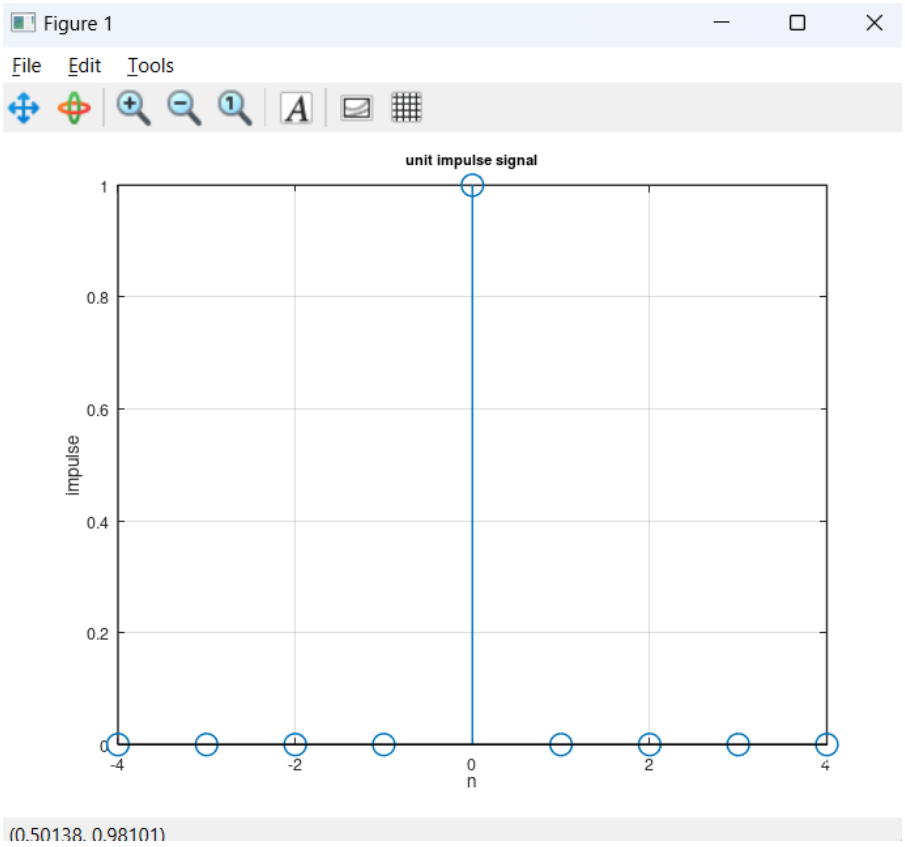
Question 01.a:

Answer:

Octave code:

```
clear alll;
close all;
clc;

n = -4:4;

%---------a------------

impulse = (n==0);
stem(n, impulse);
xlabel('n');
ylabel('impulse');
title('unit impulse signal');
grid on;

```

Figures:



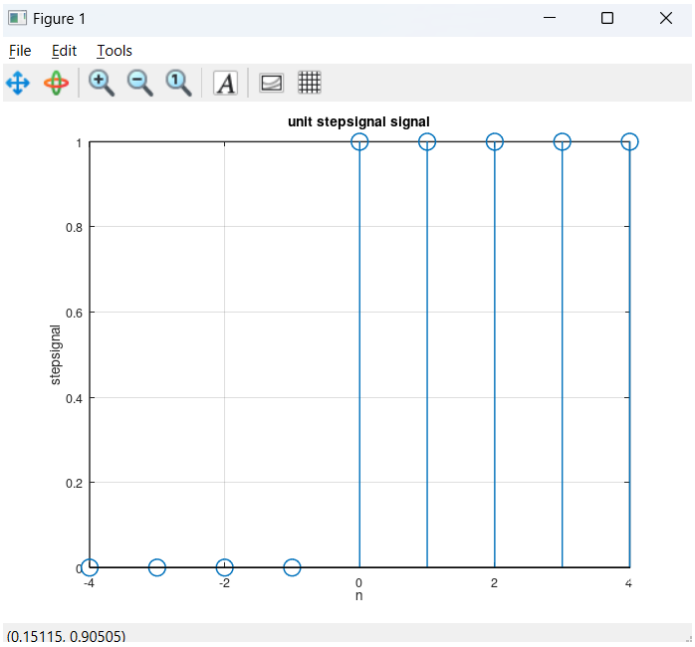
Question 01.b:

Answer:

Octave code:

```
%--------b--------------
n = -4:4;

stepsignal = (n >= 0);
stem(n, stepsignal);
xlabel('n');
ylabel('stepsignal');
title('unit stepsignal signal');
grid on;
```

Figures:



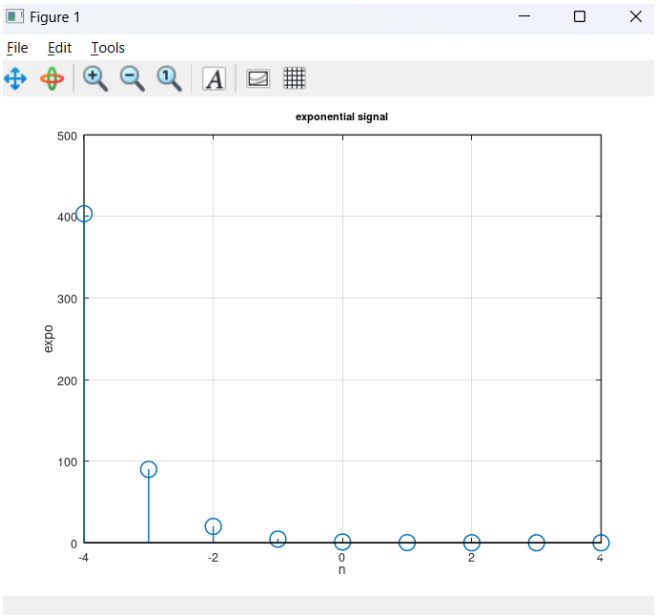
Question 01.c:

Answer:

Octave code:

```
%--------c--------------
n = -4:4;

expo = exp(-(3/2)*n);

stem(n, expo);
xlabel('n');
ylabel('expo');
title('exponential signal');
grid on;
```

Figures:



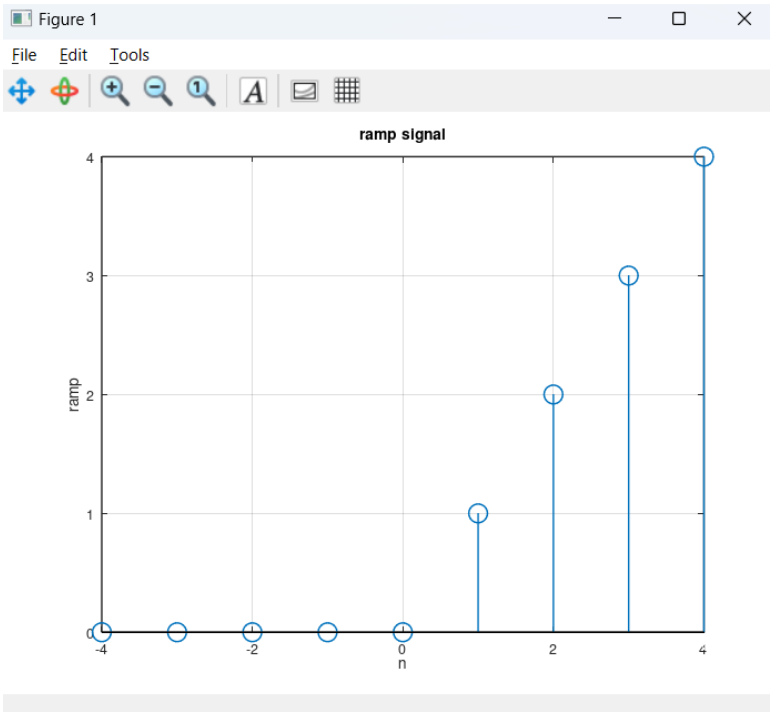
Question 01.d:

Answer:

Octave code:

```
%---------d-------------
n = -4:4;

ramp = n.*(n>=0);

stem(n, ramp);
xlabel('n');
ylabel('ramp');
title('ramp signal');
grid on;
```

Figures:



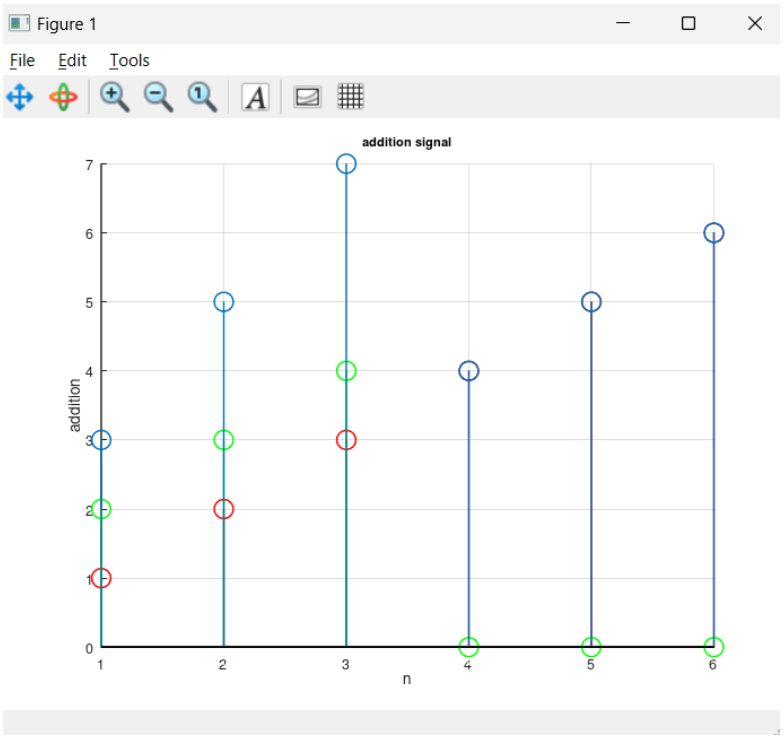
Question 01.e:

Answer:

Octave code:

```
%----------e------------

x1=[1,2,3,4,5,6];

x2=[2,3,4,0,0,0];

addition = (x1 + x2);

figure;
hold on;


stem(x1,'r');
xlabel('n');
ylabel('x1');
title('input x1 signal');
grid on;


stem(x2,'g');
xlabel('n');
ylabel('x2');
title('input x2 signal');
grid on;


stem(addition);
xlabel('n');
ylabel('addition');
title('addition signal');
grid on;
hold off;
```

Figures:



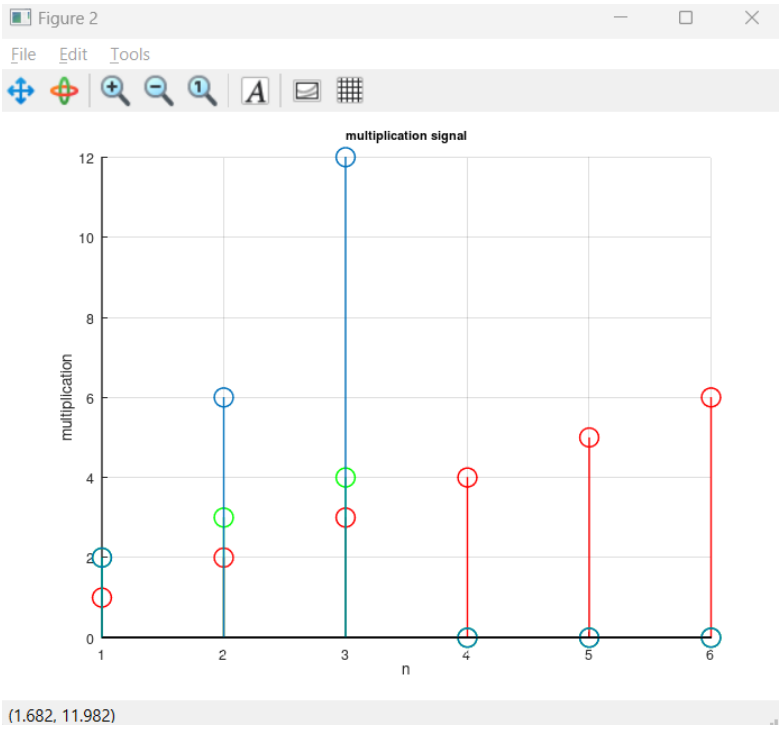
Question 01.f:

Answer:

Octave code:

```
%----------f------------

x1=[1,2,3,4,5,6];

x2=[2,3,4,0,0,0];

mul = (x1 .* x2);

figure;
hold on;


stem(x1,'r');
xlabel('n');
ylabel('x1');
title('input x1 signal');
grid on;


stem(x2,'g');
xlabel('n');
ylabel('x2');
title('input x2 signal');
grid on;


stem(mul);
xlabel('n');
ylabel('multiplication');
title('multiplication signal');
grid on;
hold off;
```

Figures:



Question 01.g:

Answer:

Octave code: