Chittagong University of Engineering And Technology

Department of Electrical And Electronic Engineering

Name of the Experiment:

Genarating different types of signals by fundamental signals(Step,Ramp,Impulse,parabolic,sinusoidal)

COURSE NO. : **EEE-496**

COURSE TITLE : **Digital Signal Processing**

Date of Experiment : **26.5.2022**

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REMARKS

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LEVEL : **4**

TERM : **1**

SECTION : **A**

Objective:-

1. **Able to generate customize signal**
2. **Implement and visualize different kind of signals.**

Problem-1:- A random geometrical shape by step,impulse and ramp response.

Hand written figure:-

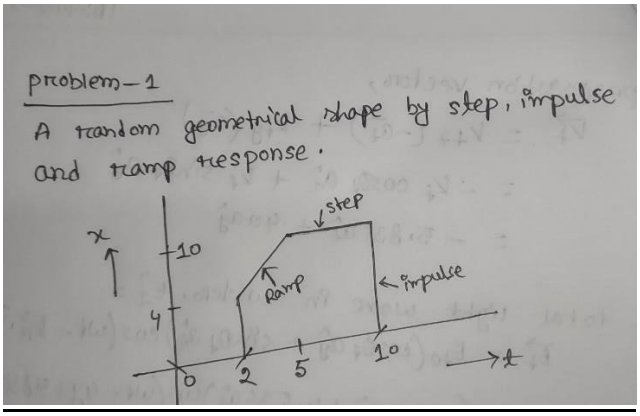

Fig.1.Hand written figure of targeted shape.

Matlab Code:-

Editor - E:\dld lab report 2\problem1.m

prb02.m | prb03.m | problem1.m

```
clc;clear all;close all
hold on
xlim([0 12])
ylim([0 12])
x1 = 0: 0.1:4;
t1 =zeros(size(x1));
for i=1:1:length(x1)
    t1(i) = 2;
end
plot(t1, x1, 'blue', 'linewidth', 2)
t2= 2: 0.1: 5;
x2 = 2*t2
plot(t2, x2, 'blue', 'linewidth',2)
t3 = 5: 0.1:10;
x3 = zeros(size(t3));
for i=1:1:length(t3)
    x3(i) = 10;
end
plot(t3, x3, 'blue', 'linewidth',2)
x4 = 0: 0.1:10;
t4 =zeros(size(x1));
for i=1:1:length(x4)
    t4(i) = 10;
end
plot(t4, x4, 'blue', 'linewidth', 2)
xlabel('t');ylabel('x');
title('An random geometry by step,impulse and ramp response')

```

Fig.2.Matlab Code for targeted shape of problem-1.

Output:-

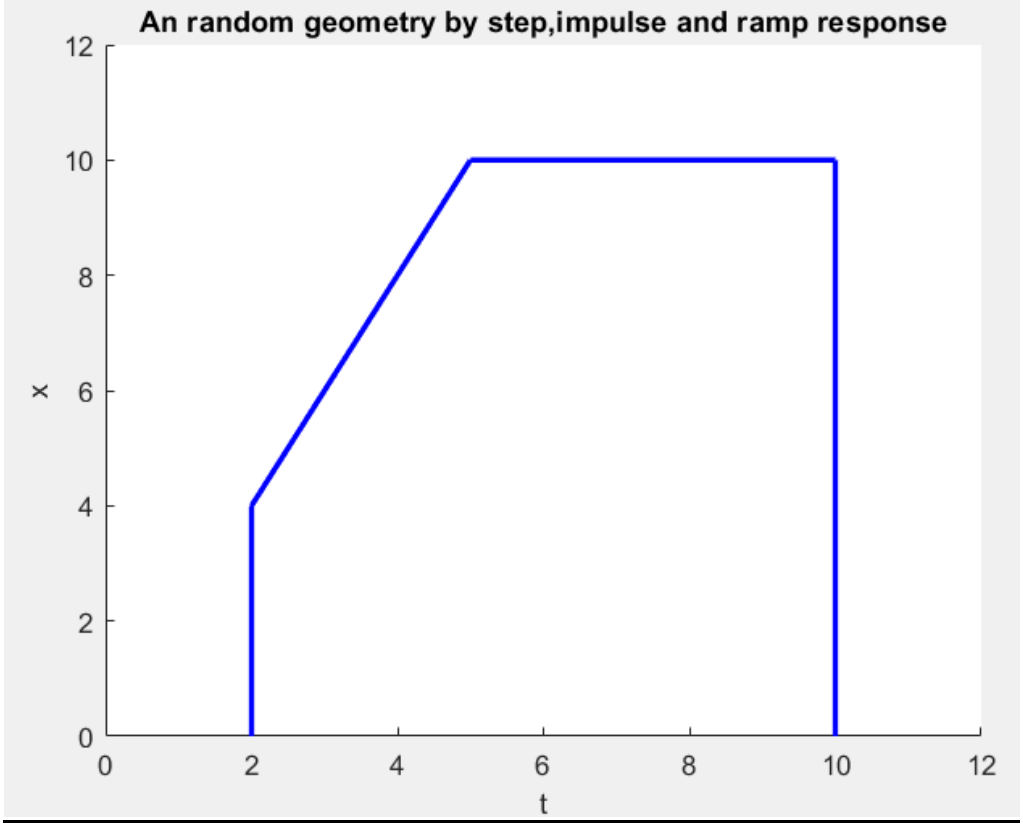

Fig.3.Genarated Output in Matlab for targeted shape of problem-1.

Problem-2:- A random geometrical shape by step,parabolic and ramp response.

Hand written figure:-

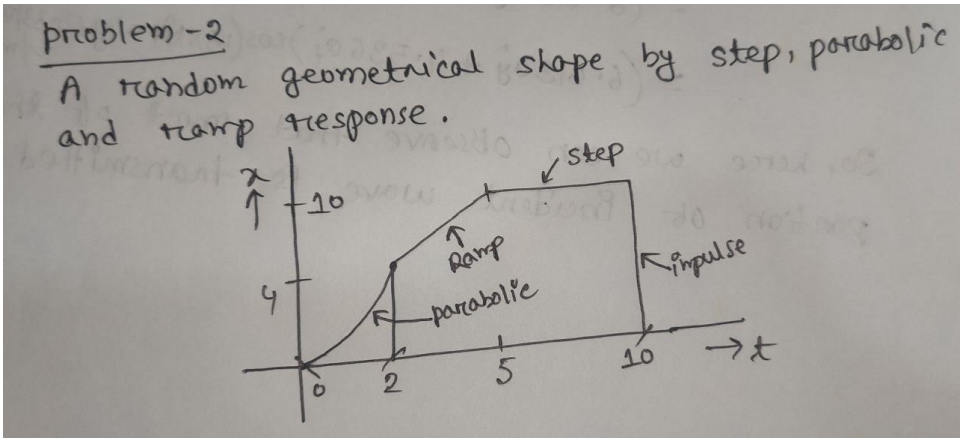

Fig.4.Hand written figure of targeted shape.

Matlab Code:-

Editor - E:\dld lab report 2\problem2.m

prb02.m | prb03.m | problem1.m | problem2.m

```
clc;clear all;close all
hold on
xlim([0 12])
ylim([0 12])
x1 = 0: 0.1:4;
t1 =zeros(size(x1));
for i=1:1:length(x1)
    t1(i) =2;
end
plot(t1, x1, 'blue', 'linewidth', 2)
t5 = 0: 0.001: 2;
x5 =  t5.*t5;
plot(t5, x5, 'blue', 'linewidth', 2)
t2= 2: 0.1: 5;
x2 = 2*t2
plot(t2, x2, 'blue', 'linewidth',2)
t3 = 5: 0.1:10;
x3 = zeros(size(t3));
for i=1:1:length(t3)
    x3(i) = 10;
end
plot(t3, x3, 'blue', 'linewidth',2)
x4 = 0: 0.1:10;
t4 =zeros(size(x1));
for i=1:1:length(x4)
    t4(i) = 10;
end
plot(t4, x4, 'blue', 'linewidth', 2)
xlabel('t');ylabel('x');
title('An random geometry by step,parabolic and ramp response')
```

Fig.5.Matlab Code for targeted shape of problem-2.

Output:-

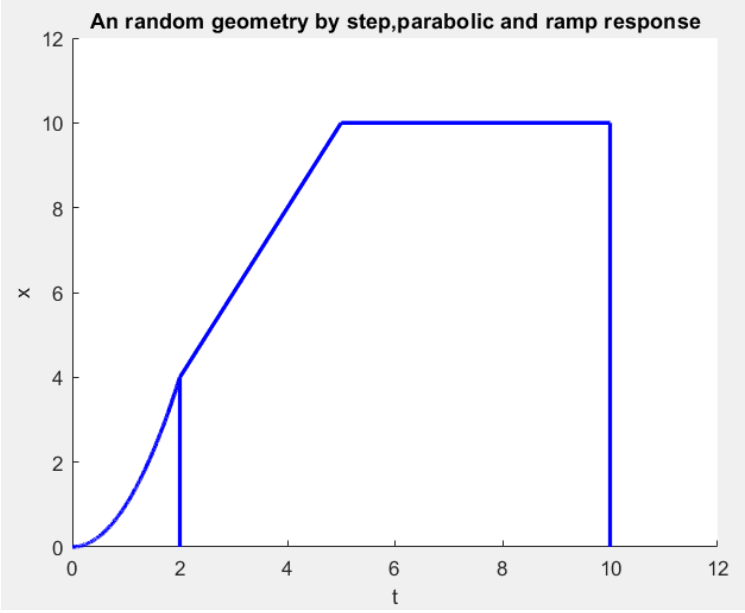

Fig.6.Genarated Output in Matlab for targeted shape of problem-2.

Problem-3:- A random geometrical shape by step,parabolic,sinusoidal and ramp response.

Hand written figure:-

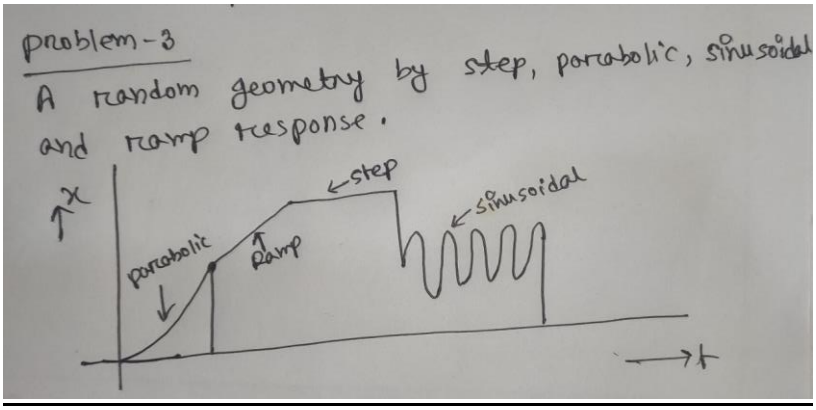

Fig.7.Hand written figure of targeted shape.

Matlab Code:-

```
clc;clear all;close all
hold on
xlim([0 15]);ylim([0 12])
x1 = 0: 0.1:4;t1 =zeros(size(x1));
for i=1:1:length(x1)
    t1(i) =2;
end
plot(t1, x1, 'blue', 'linewidth', 2);
t5 = 0: 0.001: 2;x5 =  t5.*t5;
plot(t5, x5, 'blue', 'linewidth', 2)
t2= 2: 0.1: 5;x2 = 2*t2
plot(t2, x2, 'blue', 'linewidth',2)
t3 = 5: 0.1:10;x3 = zeros(size(t3));
for i=1:1:length(t3)
    x3(i) = 10;
end
plot(t3, x3, 'blue', 'linewidth',2)
x4 = 5: 0.1:10;t4 =zeros(size(x1));
for i=1:1:length(x4)
    t4(i) = 10;
end
plot(t4, x4, 'blue', 'linewidth', 2)
f=1;pi=3.1416;t7=10:.01:14;
x7=5+ 2*sin (2*pi*f.*t7);
plot(t7, x7, 'blue', 'linewidth',2)
x8 = 0: 0.1:5;t8 =zeros(size(x1));
for i=1:1:length(x8)
    t8(i) = 14;
end
plot(t8, x8, 'blue', 'linewidth', 2);xlabel('t');ylabel('x');
title('An random geometry by step,parabolic,sinusoidal and ramp response')
```

Fig.8.Matlab Code for targeted shape of problem-3.

Output:-

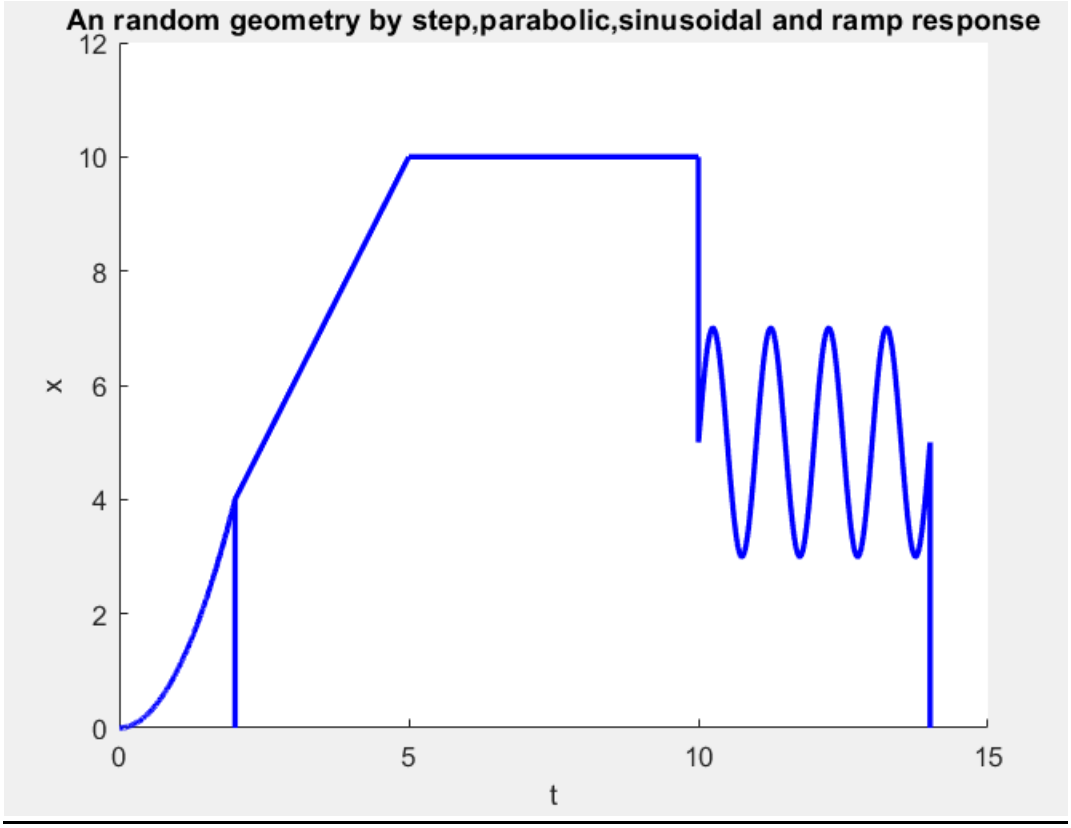

Fig.9.Genarated Output in Matlab for targeted shape of problem-3.

***Discussions*:-**

As the generated output shapes that come in matlab were almost same as the hand written random geometrical shape composed by fundamental signals like step,parabolic,ramp,impulse sinusoidal signals.In the three problem,it is same if we compare the hand written figure with the generated output in matlab.Therefore, it can be said that the experiment was done successfully.