

C.V. RAMAN POLYTECHNIC BHUBANESWAR



DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING


LAB MANUAL

Year & Semester: 3rd Year, VI Semester



Subject Code/Name: PR- 3, MATLAB and Processing Simulation Lab

SIMULATING USING MATLAB



C.V.RAMAN POLYTECHNIC, BHUBANESWAR.

	LABORATORY WORK INSTRUCTION	DEPARTMENT: ELECTRONICS & TELECOMMUNICATION ENGG.
Date of Preparation: 22-12-2012	Prepared by: <i>D. M. Behera</i> Verified by: <i>[Signature]</i>	Counter Signature of the HOD
Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Study of different arithmetic operations using MATLAB		
EQUIPMENT/TOOLS/ACCESSORIES:		
<ul style="list-style-type: none"> • Personal Computer • MATLAB Tool 		
<p>Programme-1 : Write a program to add two numbers.</p> <pre>>> 15 + 5 Ans = 20</pre> <p>Programme-2 : W.A.P to calculate e^5.</p> <pre>>> exp (5) Ans = 148.4132</pre> <p>Programme-3 : W.A.P for $2^5/(2^5-1)$ and compare with $(1-1/2^5)^{-1}$</p> <pre>>>(2^5/(2^5-1))-((1-(1/2^5)) ^-1) Ans= 0</pre> <p>Programme-4 : W.A.P for $\log_{10} e^3$</p> <pre>>>log10 (10^(-3)) Ans= -3</pre> <p>Programme-6: W.A.P $e^\pi \sqrt{163}$</p> <pre>>>exp (pi*sqrt(163)) Ans =2.6254e+017</pre>		


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Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Write a programme to make a straight line given by the equation $y=mx+c$ where $m=$ slope $=0.5$, $c=$ y intercept $= -2$ and x co-ordinates are (0-10)		
EQUIPMENT/TOOLS/ACCESSORIES: <ul style="list-style-type: none">• Personal Computer• MATLAB Tool		
Programme: m=0.5; c=-2; x=[0 1 2 3 4 5 6 7 8 9]; Plot (x,y) axis ('equal') xlabel ('x') ylabel ('y') title ('straight line')		


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Name of the Experiment: Write a programme to draw a circle having radius 2.		
EQUIPMENT/TOOLS/ACCESSORIES: <ul style="list-style-type: none">• Personal Computer• MATLAB Tool		
Programme: <pre>r=2; theta=linspace(0,2*pi,200); x=r*sin(theta); plot (x,y) axis ('equal') xlabel ('x') ylabel ('y') title ('circle')</pre>		


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Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Write a programme to draw a sine wave and a cosine wave.		
EQUIPMENT/TOOLS/ACCESSORIES: <ul style="list-style-type: none"> • Personal Computer • MATLAB Tool 		
<p>Programme: For sinewave <code>theta=linspace(0,2*pi,180);</code> <code>x=sin(theta);</code> <code>plot (x)</code> <code>axis ('equal')</code> <code>xlabel ('x')</code> <code>ylabel ('y')</code> <code>title ('sine wave')</code></p> <p>Programme: For cosinewave <code>theta=linspace(0,2*pi,180);</code> <code>x=cos(theta);</code> <code>plot (x)</code> <code>axis ('equal')</code> <code>xlabel ('x')</code> <code>ylabel ('y')</code> <code>title ('cosine wave')</code></p>		


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Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Write a programme to plot unit step, unit impulse and ramp in a single graph.		
EQUIPMENT/TOOLS/ACCESSORIES: <ul style="list-style-type: none"> • Personal Computer • MATLAB Tool 		
Programme: <pre> F s=100 t=-1:1/Fs:1; y1=[zeros(1,100) ones (1,101)]; subplot (1,3,1) plot (t,y) xlabel('time') ylabel('amplitude') title('unit step') grid on; y2=[zero(1,100) ones (1,100)]; subplot(1,3,2) plot(t,y2) xlabel('time') ylabel('amplitude') title('unit impluse') grid on; y3=t; subplot(1,3,3) plot(t,y3) xlabel('time') ylabel('amplitude') title('unit ramp') grid on; </pre>		

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Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Write a programme for amplitude modulation and sub plot different signal in one graph.		
EQUIPMENT/TOOLS/ACCESSORIES:		
<ul style="list-style-type: none"> • Personal Computer • MATLAB Tool 		
<p>Programme:</p> <pre> t=-1:0.001:1 A=5; Fc=input('Enter carrier frequency'); Fm=input('Frequency of original signal'); mf=input('modulation index'); x=A*cos(2*pi*Fm*t); subplot(3,1,1) plot(t,x) x lable('time') y lable('amplitude') title('Base band signal') grid on; c=5*cos(2*pi*Fc*t); subplot(3,1,2) plot(t,c) x lable('time') y lable('amplitude') title('Carrier') grid on; s=(A+mf*x)*cos(2*pi*Fc*t); subplot(3,1,3) plot(t,s) x lable('time') y lable('amplitude') title('Modulated signal for Fc=70,Fm=2,mf=0.5') grid on; </pre>		

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Semester: 6 th	Branch: E & TC	Name of the practical with code: Simulating using MATLAB (Pr-4)
Name of the Experiment: Write a programme for frequency modulation and demodulation.		
EQUIPMENT/TOOLS/ACCESSORIES:		
<ul style="list-style-type: none"> • Personal Computer • MATLAB Tool 		
<p>Programme:</p> <pre> fs=input('Enter the sampling frequency'); fc=input('Enter the carrier frequency'); t=(0:fs)/f; fm=input('Enter the base band signal frequency'); S1=sin(2*pi*fm*t); dev=input('Enter the value of deviation'); C1=sin(2*pi*fc*t); y=fm mod(S1,fc,fs,dev); z=fm demod(y,fc,fs,dev); subplot (4,1,1) plot (t,S1) x lable('time') y lable('amplitude') title('Base band signal') grid on; subplot(4,1,2) plot(t,C1) x lable('time') y lable('amplitude') title('Carrier') grid on; subplot(4,1,3) plot(t,y) x lable('time') y lable('amplitude') </pre>		

```
title('Frequency Modulated signal for Fs=6500,C1=100,Fm=10,dev=50')
grid on;
subplot(4,1,4)
plot(t,z)
xlabel('time')
ylabel('amplitude')
title('FM De- Modulated signal')
grid on;
```