**D) Atwood’s Machine**

SOURCE CODE:

clc

clear

clf

l = 20 *//input("initial length:")*

m1= 1.1

m2=1.0

a=0.1

g=9.8

x10=2

t0=0;

T1=input("Enter the upper time limit: ")

t=linspace(0,T1,1000)

T=sqrt((2\*(l-%pi\*a-2)\*(m1+m2))/((m1-m2)\*g))

function **p**=f(**t**, **x**)

**p**(1)=**x**(2)

**p**(2)=((m1-m2)/(m1+m2))\*g

endfunction

t=0:0.01:T

x1=ode([x10;0],t0,t,f)

x2(1,:)=l - a\*%pi - x1(1,:)

plot2d(t,x1(1,:),1)

plot2d(t,x2(1,:),2)

a=gca()

a.box="on"

a.x\_location="origin";

a.y\_location="origin";

legends(['x1';'x2'],[1,2],opt=2)

ylabel("x1 & x2","fontsize",2)

xlabel("Time","fontsize",2)

title("Atwoods Machine","fontsize",5)

OUTPUT:

Enter the upper time limit: 20

