h = 60 / 72; % Heart rate period

figure; % Create a new figure

for a = 0:h:2\*h

ECGdur = 0:0.001:2.5;

Pint = 0.11;

PRint = 0.17;

STseg = 0.10;

QTint = 0.40;

QRSint = 0.09;

pPeak = 0.25;

rPeak = 1.6;

qPeak = 0.25 \* rPeak;

sPeak = 0.35 \* rPeak;

tPeak = 0.3;

% Generation of P Wave

x = 0:0.001:Pint;

y = pPeak \* sin(x \* pi / Pint);

% Plot the P wave

plot(a + x, y);

grid on;

hold on;

%genertion of pr segment

x=Pint:0.001:PRint;

plot(a+x,0);

%qrs Complex

q1=PRint+0.015;

r1=PRint+0.045;

s1=PRint+0.075;

s2=PRint+QRSint;

x=PRint:0.001:q1;

y=-26.667\*x+4.53333;

plot(a+x,y)

x=q1:0.001:r1;

y=66.667\*x-12.733;

plot(a+x,y)

x=r1:0.001:s1;

y=-72\*x+17.08;

plot(a+x,y)

x=s1:0.001:s2;

y=37.333\*x-9.706;

plot(a+x,y)

%st segment

t1=PRint+QRSint+STseg;

x=s2:0.0001:t1;

plot(a+x,0)

%Twave

t2=PRint+QTint;

x=t1:0.001:t2;

y=tPeak\*sin((x-t1)\*pi/(t2-t1));

plot(a+x,y)

x=t2:0.0001:h;

plot(a+x,0)

xlabel('Time (s)');

ylabel('Voltage (mV)');

title('ECG Wave');

end

