```
[f,l]=plotATM('ssbn13hs01m')
sin=l(1,:)
clf
fs = 500;
f0 =25.29;
Q = 35;
w0=2*f0/fs;
bw = w0/Q;
[b,a]=iirnotch(w0,bw);
[h,w]=freqz(b,a,128,fs);
out_put = filter(b,a,sin);
m=20*log10(abs(h));
an=angle(h);
T = 1/fs;
N = length(sin);
k=0:N-1;
t=k*T;
%plotting raw signal
figure(1)
subplot(3,2,1)
plot(t,sin)
set(gca,'FontSize',7,'FontWeight','bold')
xlabel('Time','FontSize',7,'FontWeight','bold');
ylabel('Amplitude','FontSize',7,'FontWeight',"bold");
title('Raw signal');
grid on
%plotting iirnotch
```

```matlab
subplot(3,2,2);
plot(w,m);
grid on;
set(gca,'FontSize',7);
title('IIR notch Filter');
xlabel('Frequency','FontSize',7,"FontWeight","bold");
ylabel('Amplitude','FontSize',7,"FontWeight","bold");
%plotting filtered ecg
subplot(3,2,3);
plot(t,out_put);
grid on;
set(gca,'FontSize',7);
title('Filtered signal');
xlabel('Time','FontSize',7,"FontWeight","bold");
ylabel('Amplitude','FontSize',7,"FontWeight","bold");
%plotting freq resp of filtered
[h2,w2] = freqz(out_put,1,128,fs);
subplot(3,2,4);
plot(w2,abs(h2));
grid on;
set(gca,'FontSize',7);
title('Frequency response of Filtered signal');
xlabel('Frequency','FontSize',7,"FontWeight","bold");
ylabel('Amplitude','FontSize',7,"FontWeight","bold");
%plotting freq response of raw signal
[h1,w1] = freqz(sin,1,128,fs);
subplot(3,2,5);
```

```matlab
plot(w1,abs(h1));
grid on;
set(gca,'FontSize',7);
title('Frequency response of raw signal');
xlabel('Frequency','FontSize',7,"FontWeight","bold");
ylabel('Amplitude','FontSize',7,"FontWeight","bold");
%butter
rp=0.5
rs=50
wp=[0.09 0.12]
ws=[0.1 0.11];
[n,wn] = buttord(wp,ws,rp,rs)
[b,a] = butter(n,wn,'stop')
w=0:0.1:pi;
[h,om]=freqz(b,a,w)
m=20*log10(abs(h))
an=angle(h);
figure(2);
%plotting raw signal
subplot(3,2,1)
plot(t,sin)
set(gca,'FontSize',7,'FontWeight','bold')
xlabel('Time','FontSize',7,'FontWeight','bold');
ylabel('Amplitude','FontSize',7,'FontWeight',"bold");
title('Raw SIGNAL');
grid on
%plotting buttorworth
```

```matlab
subplot(3,2,2)

plot(om/pi,m);

grid on;

set(gca,'FontSize',7);

title('Buttorworth bandstop filter');

xlabel('Frequency','FontSize',7,"FontWeight","bold");

ylabel('Magnitude','FontSize',7,"FontWeight","bold");

%plotting filtered output

out_put = filter(b,a,sin);

subplot(3,2,3);

plot(t,out_put);

grid on;

set(gca,'FontSize',7);

title('Filtered signal');

xlabel('Time','FontSize',7,"FontWeight","bold");

ylabel('Amplitude','FontSize',7,"FontWeight","bold");

%plotting freq resp of filtered

[h2,w2] = freqz(out_put,1,128,fs);

subplot(3,2,4);

plot(w2,abs(h2));

grid on;

set(gca,'FontSize',7);

title('Frequency response of Filtered signal');

xlabel('Frequency','FontSize',7,"FontWeight","bold");

ylabel('Amplitude','FontSize',7,"FontWeight","bold");

%plotting freq response of raw

[h1,w1] = freqz(sin,1,128,fs);
```

```
subplot(3,2,5);

plot(w1,abs(h1));

grid on;

set(gca,'FontSize',7);

title('Frequency response of raw signal');

xlabel('Frequency','FontSize',7,"FontWeight","bold");

ylabel('Amplitude','FontSize',7,"FontWeight","bold");
```