Matlab Code for Amplitude Demodulation:

```matlab
clc;
clear all;
close all;
Fc=20;
Fs=160;
Fm=0.4;
Vc=1;
Vm=1;
t=0:1/Fs:10;
c=Vc*cos(2*pi*Fc*t);
m=Vm*cos(2*pi*Fm*t);
y=ammod(m,Fc,Fs);
subplot(5,1,1);
plot(t,m);
title('Modulating Signal');
xlabel('Time(s)');
ylabel('amplitude');
subplot(5,1,2);
plot(t,c);
title('Carrier Signal');
xlabel('Time(s)');
ylabel('amplitude');
subplot(5,1,3);
plot(t,y);
title('Modulated Signal');
xlabel('Time(s)');
ylabel('amplitude');

Vd(1)=0;
for i=2:length(y)
    if y(i)>Vd(i-1)
        Vd(i)=y(i);
    else
        Vd(i)=Vd(i-1)-0.023*Vd(i-1);
    end
end
h=fir1(100,0.0125,'low');
foutputc=filter(h,1,Vd);
subplot(5,1,4);
plot(t,Vd);
title('Envelope detector output of modulating signal');
xlabel('Time(s)');
ylabel('amplitude');
subplot(5,1,5);
```

```
plot(t,foutputc);
title('Demodulated signal');
xlabel('Time(s)');
ylabel('amplitude');
```

Output: