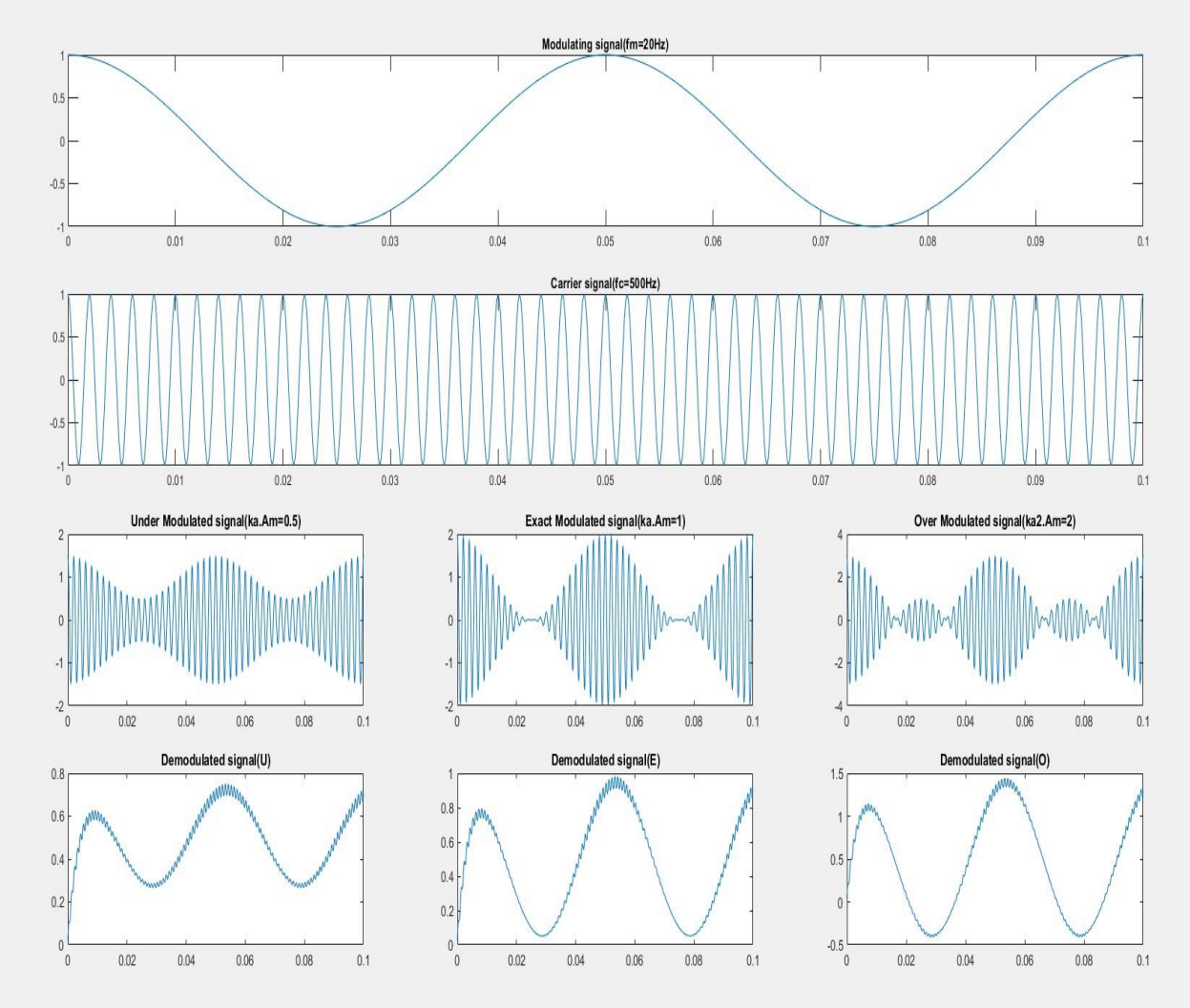
NAME : E.G.PRADEEP
ROLL NO :RA2211004050026
SUB : COMMUNICATION LABORATORY
SUB CODE : 21ECC322L
EXPERIMENT NO-1.AM MODULATOR AND DEMODULATOR

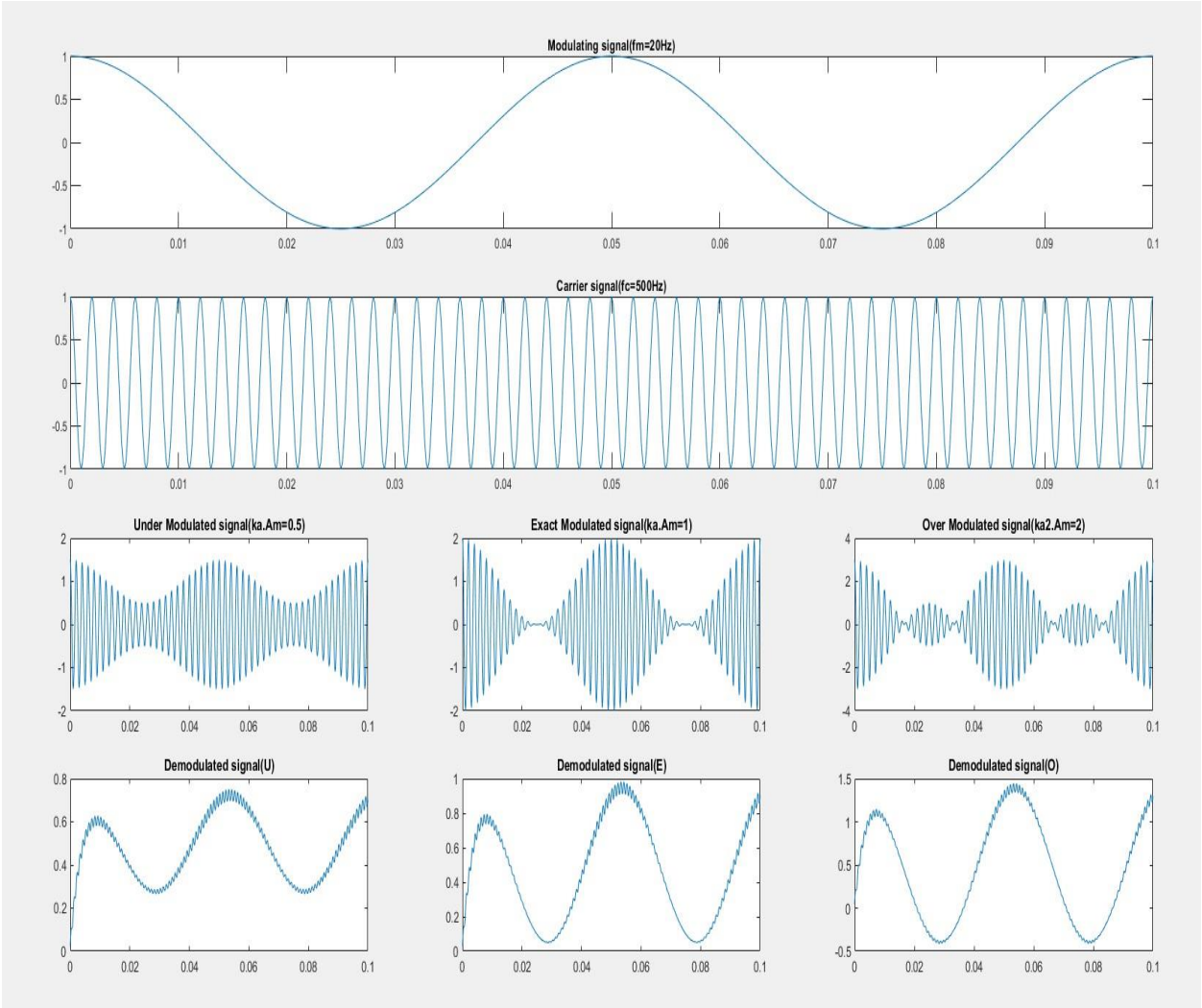
CODE:

```
close all
clear all clc
fs=8000;
fm=20;
fc=500;
Am=1;
Ac=1;
t=(0:0.1*fs)/fs;
m=Am*cos(2*pi*fm*t);
c=Ac*cos(2*pi*fc*t); ka=0.5;
u=ka*Am; s1=Ac*(1+u*cos(2*pi*fm*t)).*cos(2*pi*fc*t);
subplot(4,3,1:3);
plot(t,m);
title('Modulating signal(fm=20Hz)'); subplot(4,3,4:6);
plot(t,c);
title('Carrier signal(fc=500Hz)'); subplot(4,3,7);
plot(t,s1);
title('Under Modulated signal(ka.Am=0.5)'); ka1=1;
u1=ka1*Am;
s2=Ac*(1+u1*cos(2*pi*fm*t)).*cos(2*pi*fc*t);
subplot(4,3,8);
plot(t,s2);
title('Exact Modulated signal(ka.Am=1)'); ka2=2;
u2=ka2*Am;
s3=Ac*(1+u2*cos(2*pi*fm*t)).*cos(2*pi*fc*t);
subplot(4,3,9);
plot(t,s3);
title('Over Modulated signal(ka2.Am=2)'); r1=s1.*c;
r2=s2.*c;
r3=s3.*c;
[b,a]=butter(1,0.01);
mr1=filter(b,a,r1);
mr2=filter(b,a,r2);
mr3=filter(b,a,r3);
subplot(4,3,10);
plot(t,mr1); title('Demodulated
signal(U)') subplot(4,3,11);
plot(t,mr2); title('Demodulated
signal(E)') subplot(4,3,12);
plot(t,mr3);
title('Demodulatedsignal(O)')
```

OUTPUT:


Modulating signal(fm=20Hz)
Carrier signal(fc=500Hz)
Under Modulated signal(ka.Am=0.5)
Exact Modulated signal(ka.Am=1)
Over Modulated signal(ka2.Am=2)
Demodulated signal(U)
Demodulated signal(E)
Demodulated signal(O)

OU


Modulating signal(fm=20Hz)
Carrier signal(fc=500Hz)
Under Modulated signal(ka.Am=0.5)
Exact Modulated signal(ka.Am=1)
Over Modulated signal(ka2.Am=2)
Demodulated signal(U)
Demodulated signal(E)
Demodulated signal(O)