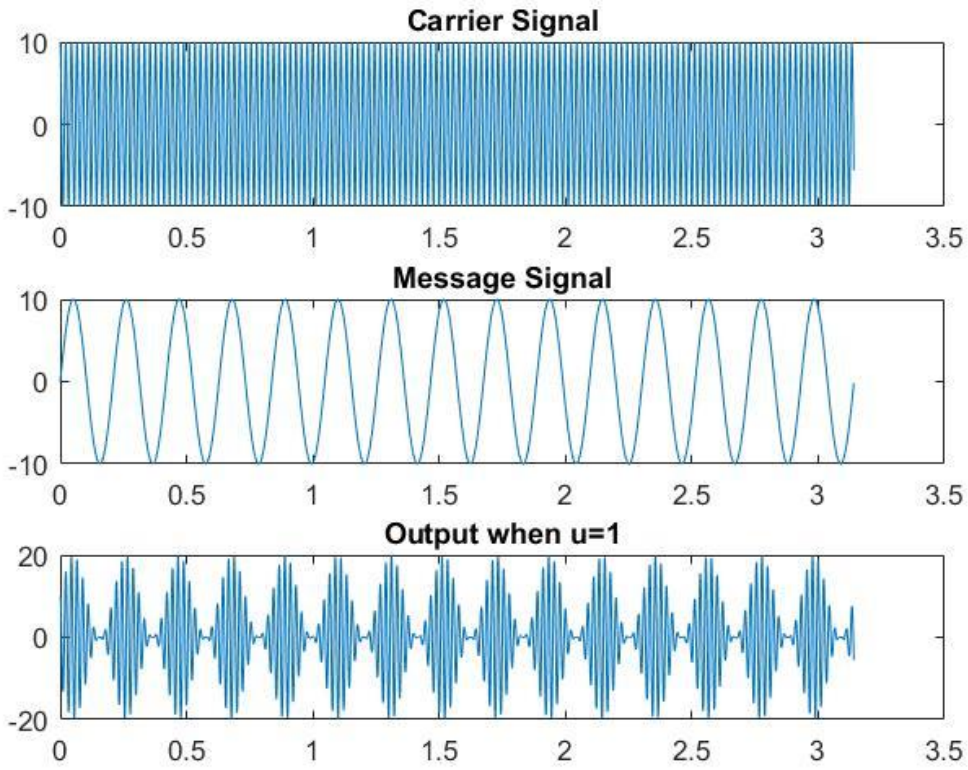
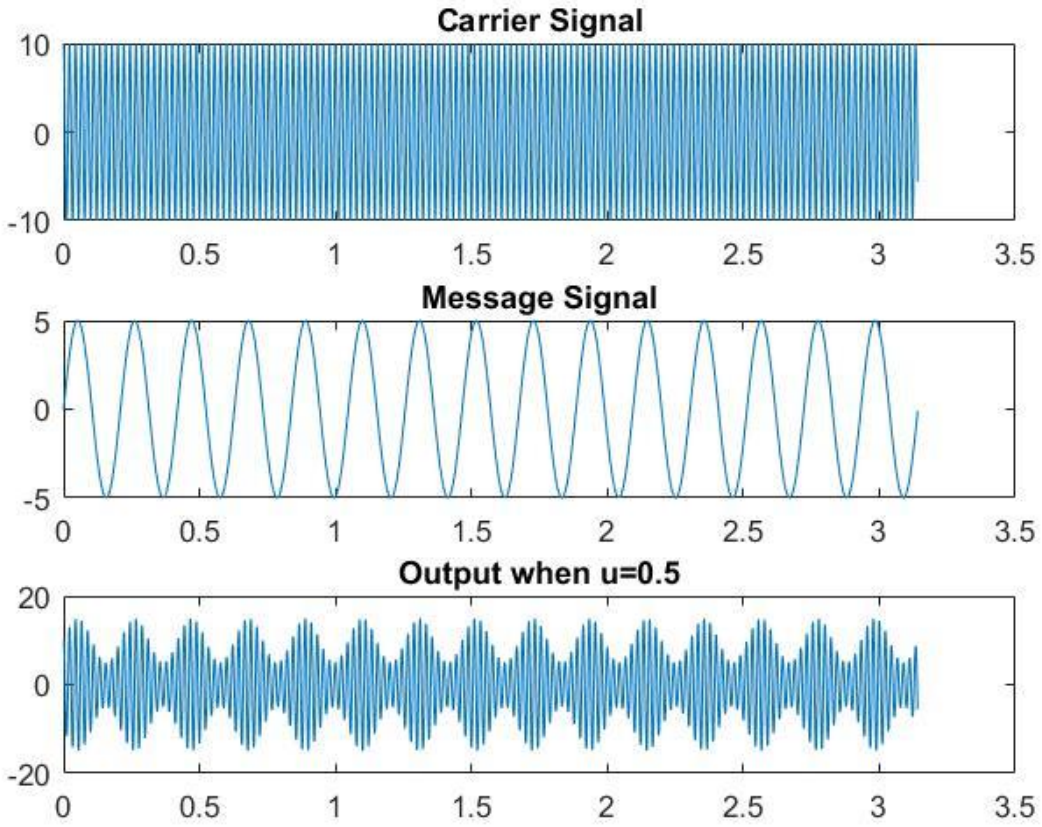
MATLAB Codes:

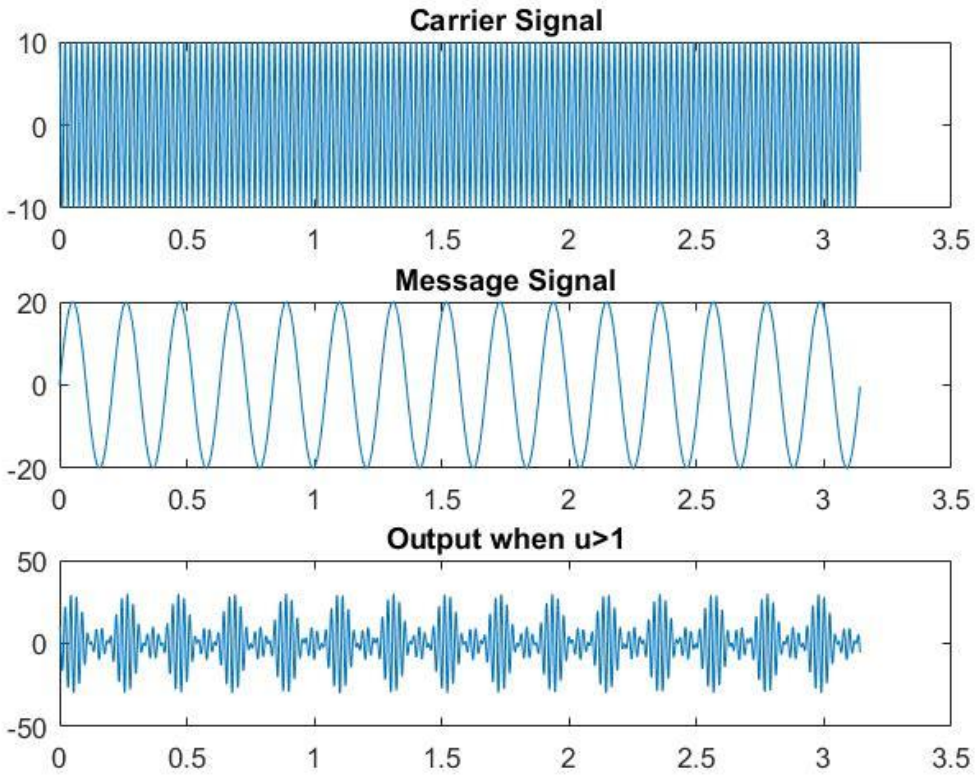
```
t=0:0.001:pi;
AC=10;
AM=10;
wc=90.*pi;
wm=30;

%%Defining Carrier Wave
xc=AC.*cos(wc.*t);
subplot(3,1,1);
plot(t,xc);
title ('Carrier Signal');

%%Defining Message Signal
xm= AM.*sin(wm.*t);
subplot(3,1,2);
plot(t,xm);
title ('Message Signal');


%%Final Output Wave
f=(xm.*cos(wc.*t))+xc;
subplot(3,1,3);
plot(t,f);
title ('Output when u=1');
```



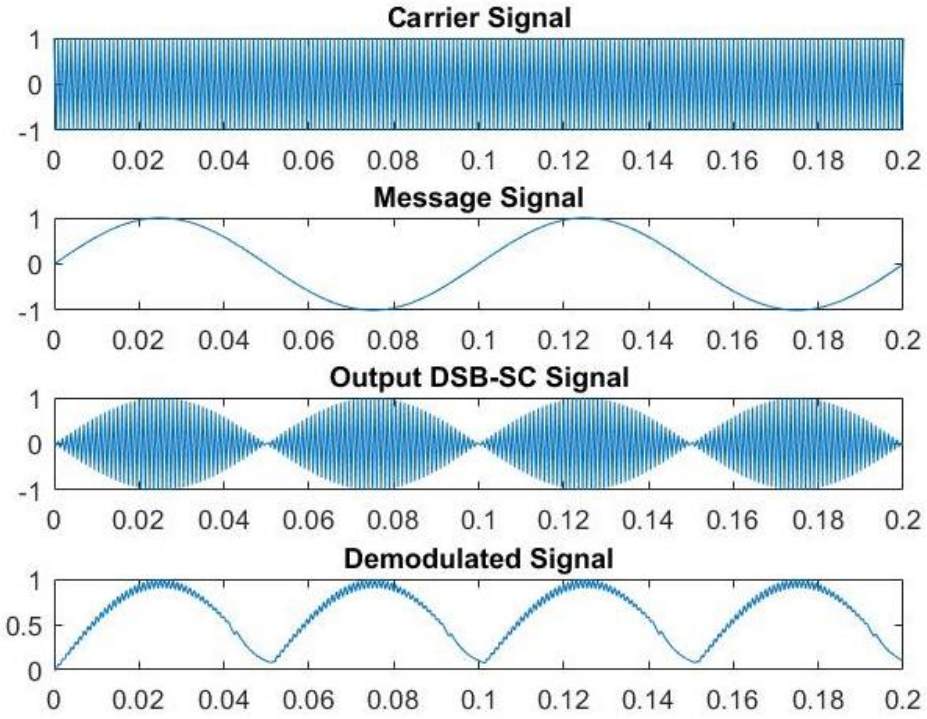
```
t=0:0.001:pi;
AC=10;
AM=5;
wc=90.*pi;
wm=30;

%%Defining Carrier Wave
xc=AC.*cos(wc.*t);
subplot(3,1,1);
plot(t,xc);
title ('Carrier Signal');

%%Defining Message Signal
xm= AM.*sin(wm.*t);
subplot(3,1,2);
plot(t,xm);
title ('Message Signal');


%%Final Output Wave
f=(xm.*cos(wc.*t))+xc;
subplot(3,1,3);
plot(t,f);
title ('Output when u=0.5');
```



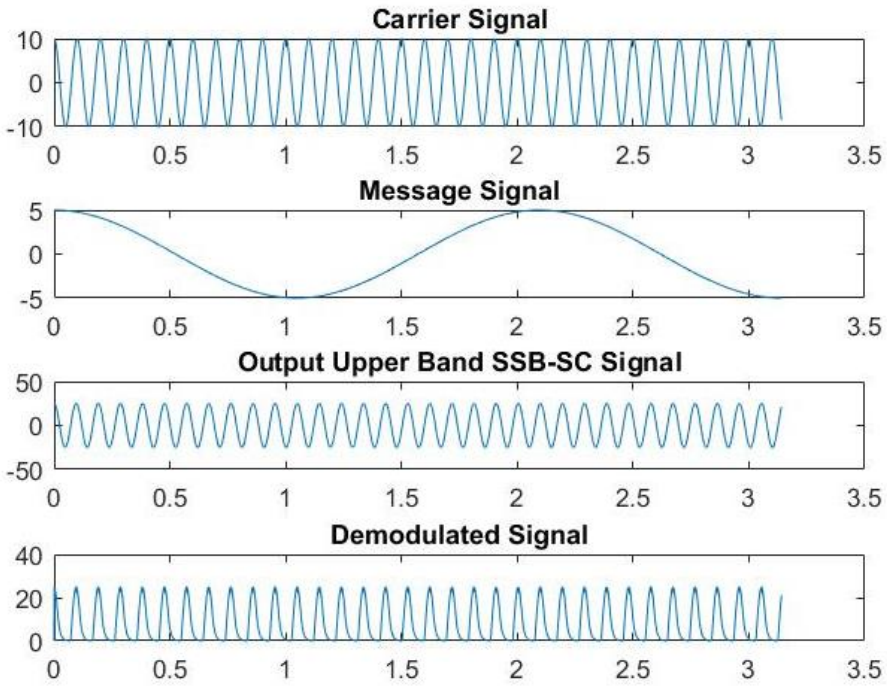
```
t=0:0.001:pi;
AC=10;
AM=20;
wc=90.*pi;
wm=30;

%%Defining Carrier Wave
xc=AC.*cos(wc.*t);
subplot(3,1,1);

plot(t,xc);
title ('Carrier Signal');

%%Defining Message Signal
xm= AM.*sin(wm.*t);
subplot(3,1,2);
plot(t,xm);
title ('Message Signal');


%%Final Output Wave
f=(xm.*cos(wc.*t))+xc;
subplot(3,1,3);
plot(t,f);
title ('Output when u>1');
```



```
t=0:0.0005:0.2;
AC=1; AM=1;
wc=2000*pi;
wm=20*pi;
T=0.1;
%%Defining Carrier Wave
xc=AC.*cos(wc.*t);
subplot(4,1,1);
plot(t,xc);
title ('Carrier Signal');
%%Defining Message Signal
xm= AM.*sin(wm.*t);
subplot(4,1,2);
plot(t,xm);
title ('Message Signal');
%%Final Output Wave
f=(xm.*cos(wc.*t));
subplot(4,1,3);
plot(t,f);
title ('Output DSB-SC Signal');
%%Demodulation
VC(1)=0;
for i=2:length(f)
    if f(i)>VC(i-1)
        VC(i)=f(i);
     else
        VC(i)= VC(i-1)*(1-T);
     end
end
subplot(4,1,4)
plot(t,VC);
title ('Demodulated Signal');
```



```
t=0:0.001:pi;
AC=10;
AM=5;
wc=20.*pi;
wm=3;
%%Defining Carrier Wave
xc=AC.*cos(wc.*t);
subplot(4,1,1);
plot(t,xc);
title ('Carrier Signal');
%%Defining Message Signal
xm= AM.*cos(wm.*t);
subplot(4,1,2);
plot(t,xm);
title ('Message Signal');
%%Final Output Wave
f=(AM.*AC*cos((wc+wm).*t))./2;
subplot(4,1,3);
plot(t,f);
title ('Output Upper Band SSB-SC Signal');
%%Demodulation
VC(1)=0;
for i=2:length(f)
    if f(i)>VC(i-1)
         VC(i)=f(i);
     else
         VC(i)= VC(i-1)*(1-T);
     end
end
subplot(4,1,4)
plot(t,VC);
title ('Demodulated Signal');
```



Demodulation of AM

```
fc=1000;
fs=2000;
t=0:0.0005:0.2;
AC=1;
msg=0.5;
m=0.5;
fm=20;
T=0.023;
w=2*pi;
%%Message Signal
xm= msg*cos(2*pi*fm*t);
subplot(4,1,1);
plot(t,xm);
title('Message Signal');
%%Carrier wave
xc= AC*cos(2*pi*fc*t);
subplot(4,1,2);
plot(t,xc);
title('Carrier Signal');
%%AM Wave
AM= cos(w*1000*t) + (0.25*cos(w*1020*t)) + (0.25*cos(w*980*t));
subplot(4,1,3)
plot(t,AM);
title ('AM Signal');
%%Demodulation
VC(1)=0;
for i=2:length(AM)
    if AM(i)>VC(i-1)
         VC(i)=AM(i);
     else
         VC(i)= VC(i-1)*(1-T);
     end
end
subplot(4,1,4)
plot(t,VC);
title ('Demodulated Signal');
```