```
//Name: Tushar Bhand
//Roll no:204A024
// AM signal(DSB_FC)
clc;
clear;
close;
fm=5; // Message frequency
fc=50; // Carrier frequency
t=0:0.001:2;
p=length(t);
am=input("Enter the Information signal amplitude= ");
ac=input("Enter the carrier signal amplitude( ac>am )= ");
msgsignal=am*cos(2*%pi*fm*t); // Message Signal Generation
figure(1);
subplot(4,1,1);
plot(t,msgsignal);
xlabel("Time");
ylabel("Amplitude")
title("Information Signal");
carriersignal=ac*cos(2*%pi*fc*t) ;// Carrier Signal generation
subplot(4,1,2);
plot(t,carriersignal);
xlabel("Time");
ylabel("Amplitude")
title("Carrier Signal");
m = am/ac; //Modulation index
disp(m,"The Modulation Index is");
am_mod=(1+m.*msgsignal).*carriersignal ;//Amplitude Modulation Generation
subplot(4,1,3);
```

```
plot(t,am_mod);
xlabel("Time");
ylabel("Amplitude")
title("Amplitude Modulated Signal");
demod=am_mod.*carriersignal;
k= abs(fft(demod));
x=[ones(1,4*fm),zeros(1,p-4*fm)];
output=k.*x;
subplot(4,1,4);
plot(t,ifft(output));
xlabel("Time");
ylabel("Amplitude")
title("Demodulated Message")
```

Output:

Enter the Information signal amplitude= 3

Enter the carrier signal amplitude(ac>am)= 5

0.6

"The Modulation Index is"