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1  /////To Generate Amplitude Modulation Signal
2  clc;
3  clear;
4  xdel(winsid());
5  pi=%pi;
6  //to generate carrier signal
7  fc = 5000;
8  Ac = 10;
9  t = 0:0.00001:0.01;
10 Vc = Ac*sin(((2*pi)*fc)*t);
11 subplot(311)
12 plot(t,Vc)
13 title('Carrier Wave','color','red','fontsize',3);
14 xlabel("Continuous Time, t","fontsize",2,"color","black");
15 ylabel("Amplitude, x(t)","fontsize",2,"color","black");
16 //to generate modulating signal
17 fm = 500;
18 Am = 5;
19 Vm = Am*sin(((2*pi)*fm)*t);
20 subplot(312)
21 plot(t,Vm)
22 title('Modulating Wave','color','blue','fontsize',3);
23 xlabel("Continuous Time, t","fontsize",2,"color","black");
24 ylabel("Amplitude, x(t)","fontsize",2,"color","black");
25 //to generate modulation signal with modulation index, m = 0.5
26 m = Am/Ac;
27 Vt = (Ac*(1+m*sin(((2*pi)*fm)*t))) .*sin(((2*pi)*fc)*t);
28 subplot(313)
29 plot(t,Vt)
30 title('Amplitude Modulated Wave','color','green','fontsize',3);
31 xlabel("Continuous Time, t","fontsize",2,"color","black");
32 ylabel("Amplitude, x(t)","fontsize",2,"color","black");
33 //to generate frequency spectrum of generated AM wave
34 Vf = abs(fft(Vt)); //abs(fft(Vt,2048))/1024;
35 scf(1); //figure3
36 plot2d(Vf);
37 title('Frequency Spectrum','color','green','fontsize',3);
38 xlabel("Frequency, f","fontsize",2,"color","black");
39 ylabel("Amplitude","fontsize",2,"color","black");
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41
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