# HOMEWORK-3

Note: All figures title must be your Name & ID. Example: Student_Name_ID:1234567890

1. Write MATLAB code for AM modulation using modulation index. Here message signal is **M(t) = A_m*sin(2*pi*f_m*t),** and Carrier Signal is **C(t)=A_c*sin(2*pi*f_c*t). A_m=2 and modulation Index=.6. F_m = 1 and F_c = 20.**

2. Write MATLAB code for DSB-SC & SSB modulation. Here message signal is
   M(t) = sin(2*pi*15*t) + 2*cos(2*pi*25*t) and **sampling frequency, F_s = 10000, carrier frequency F_c = 500.**

3. Write MATLAB code for SSB modulation and demodulation. Here message signal is **x = sin(2*pi*5*t) + 2*cos(2*pi*30*t)**, **sampling frequency, F_s = 10000, carrier frequency F_c = 400.**

4. Build the SIMULINK model of Amplitude modulation & Demodulation. For **Message Signal: amplitude = 1, frequency = 5. For Carrier Signal: amplitude = 2, frequency = 50.**

5. Find the **current I** and **voltage V** of the following circuit.
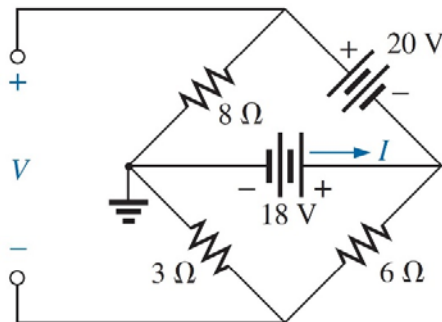
6. Find the **current I** and **voltage V** of the following circuit.
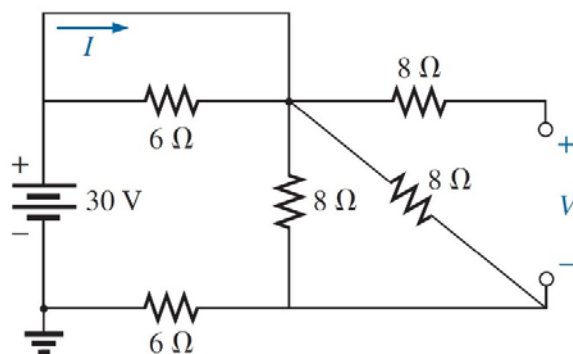
7. Write MATLAB code for Frequency Modulation. **Message signal x = sin(2*pi*F_m*t) and Carrier Signal C(t) = sin(2*pi*F_c*t); Message frequency, Fm = 1; Carrier frequency, Fc = 10; Modulation Index = 2.**

8. Write MATLAB code for Both Narrow Band & Wide Band Frequency Modulation. **Message signal x = sin(2*pi*F_m*t) and Carrier Signal C(t) = sin(2*pi*F_c*t); Message frequency, Fm = 3; Carrier**

frequency, Fc = 30; For Narrow Band Modulation Index, B_1 = .5 & For Wide Band Modulation Index, B_2=4.

9. Write MATLAB code Wide Band Frequency Modulation & Demodulation. **Message signal x = sin(2*pi*F_m*t); Message frequency, Fm = 10; Carrier frequency, Fc = 50; Deviation, d=15.**