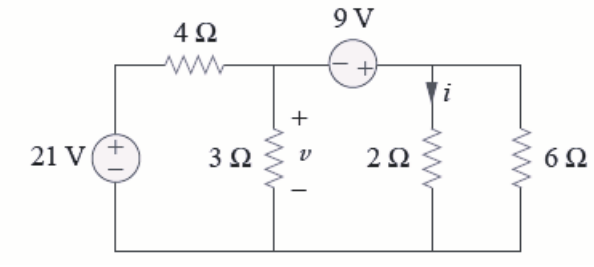
CSE251: ASSIGNMENT-1

Full Marks: 70

Q1. [CO2] 10

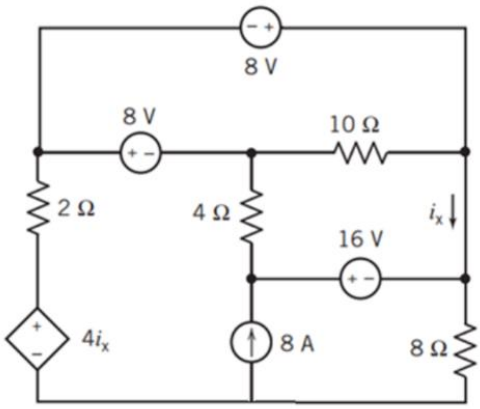
a. **Draw** the alternative representation of circuit-1 .

b. **Analyze** the Circuit from question-1 to determine v and I .



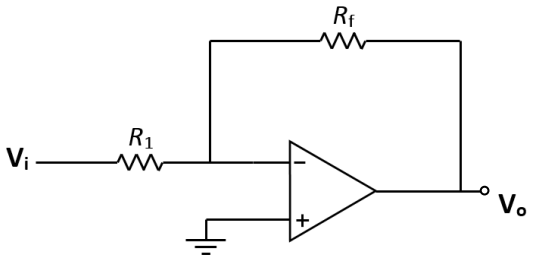
Circuit-1

c. **Draw** an alternative representation of circtuit-2 minimizing the number of floating voltage sources.



Circuit-2

Q2. [CO2] 10



Circuit-3

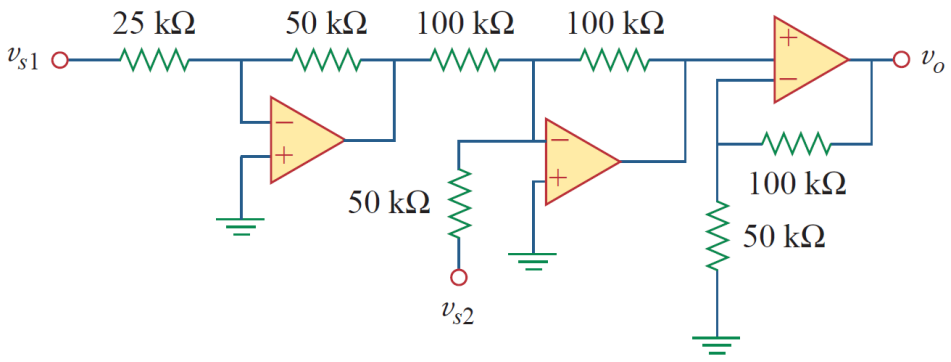
For the circuit shown above , R_1=2k, R_f=6k, $+V_s$= +15v , $-V_s$= -15v

a. **Find** the value of V_o if V_i=4v

b. **Draw** the graph of V_o with proper labels if V_i= 4sin(ωt)

c. **Draw** the graph of V_o with proper labels if V_i= 6sin(ωt)

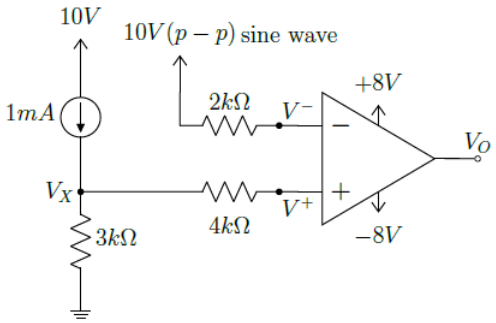
Q3. [CO2] 10



Analyze Circuit to Find V_o in terms of input V_{s1} and V_{s2}.

Q4. [CO2] 10

Analyze the circuit to find Vx. Draw the waveform of V_O and label the graph properly.



Q5. [CO3] **Design** a circuit using OP-Amp to implement the following functions 10

a. $f = 6x - 5y + z$

b. $f = 5x - 10\frac{dy}{dt} + 2\int z\,dt$

Q6. [CO3] 5

Design a Circuit using OP-Amp that follows the voltage transfer characteristics (VTC) shown in figure-01

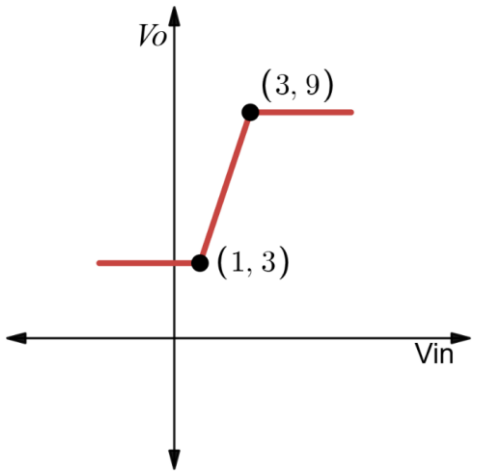


Figure 01

Q7. [CO3] Design a circuit using OP-Amp that takes V_{in} as the input and generates V_{out} as illustrated in Figure-2 10

I. Design the circuit using inverting amplifier .

II. Design the circuit using non-inverting amplifier .

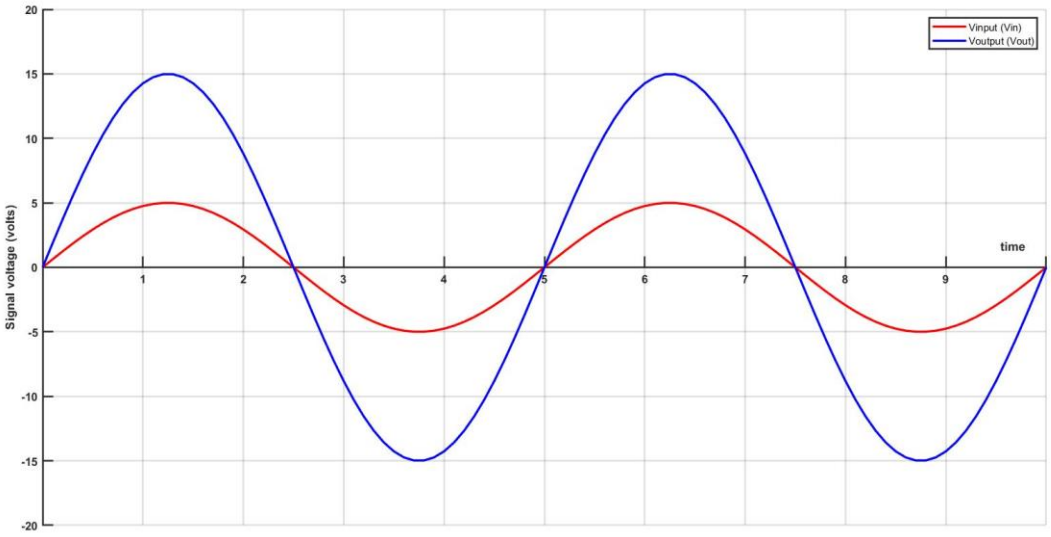


Figure 02

Q8. [CO3] Design a circuit using OP-Amp to generate the output V_{out} from the input V_{in} as illustrated in figure-3 . 5

[*Hinst: use summing amplifier*]

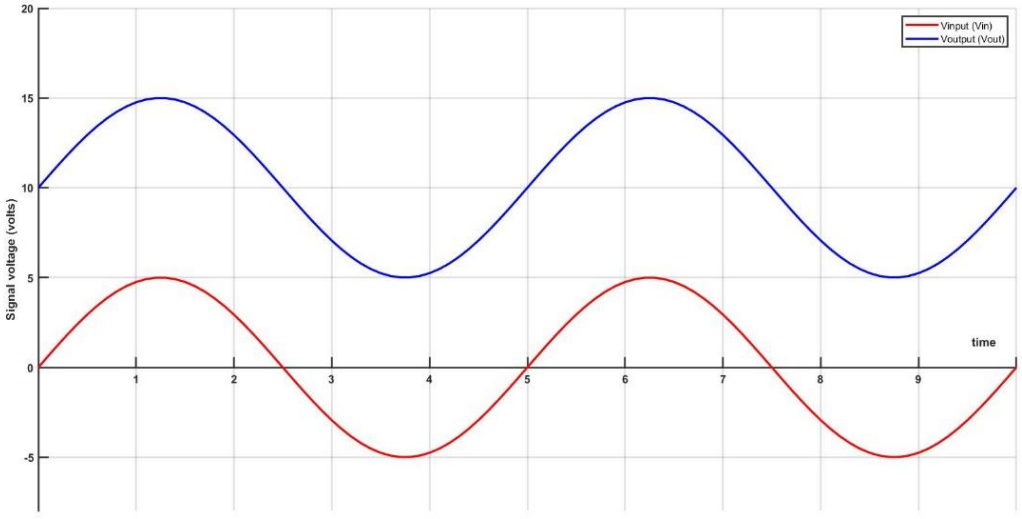


Figure 03