EE232-INTRODUCTION TO ELECTRONICS
EXERCISE-2.3

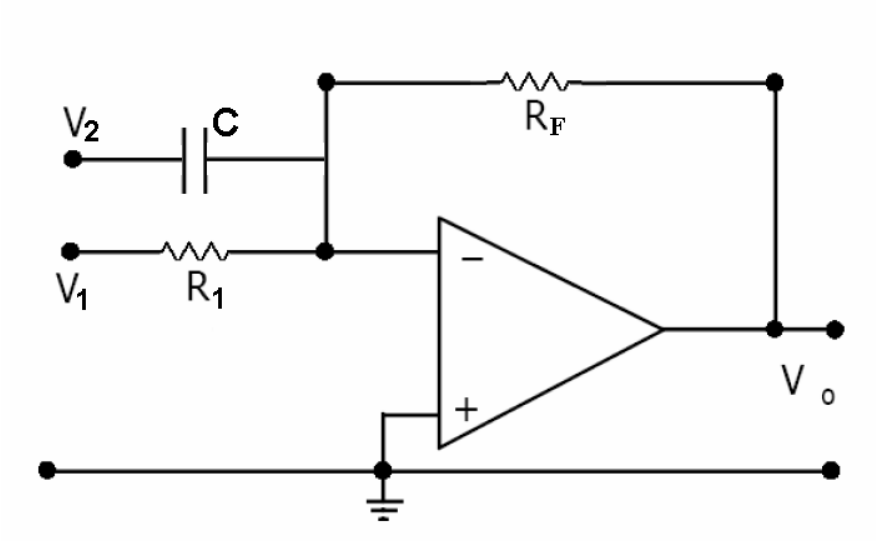

Figure-1

Question: Find the output voltage expression (Vo=F(V_1,V_2)) of the circuit given in the Figure-1.

Solution: The circuit are composed of linear components; therefore also the circuit is a linear circuit and gives a linear transfer function. Thus, one can use the principle of superposition for the circuit analysis. Below, the inputs are reduced to zero, respectively, and the resulting circuits are solved in order to obtain the corresponding output voltages. Then, the sum of the voltages gives the total output voltage, that is, the output voltage expression at the circuit given in the Figure-1.

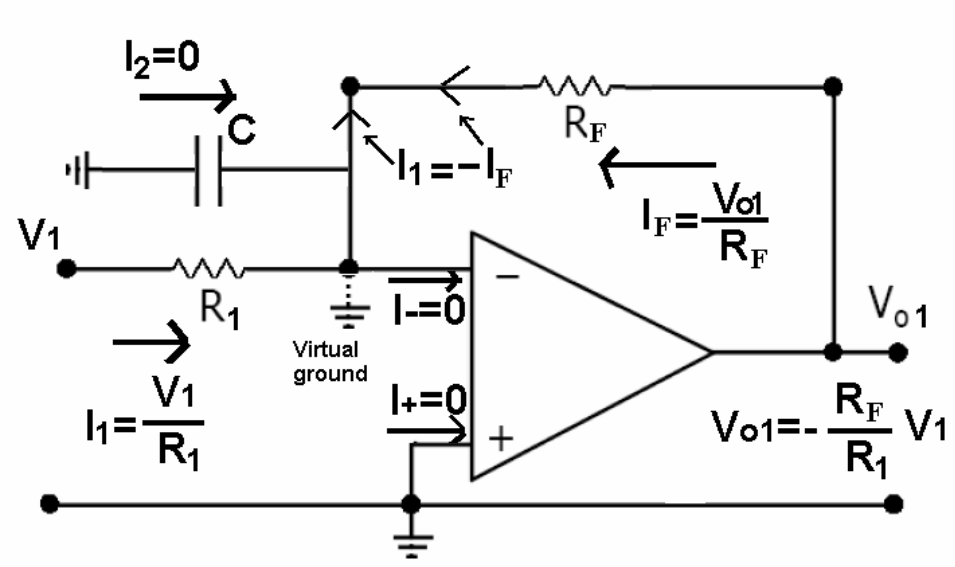

Figure-2 Circuit analysis for that V_2 is reduced to zero.

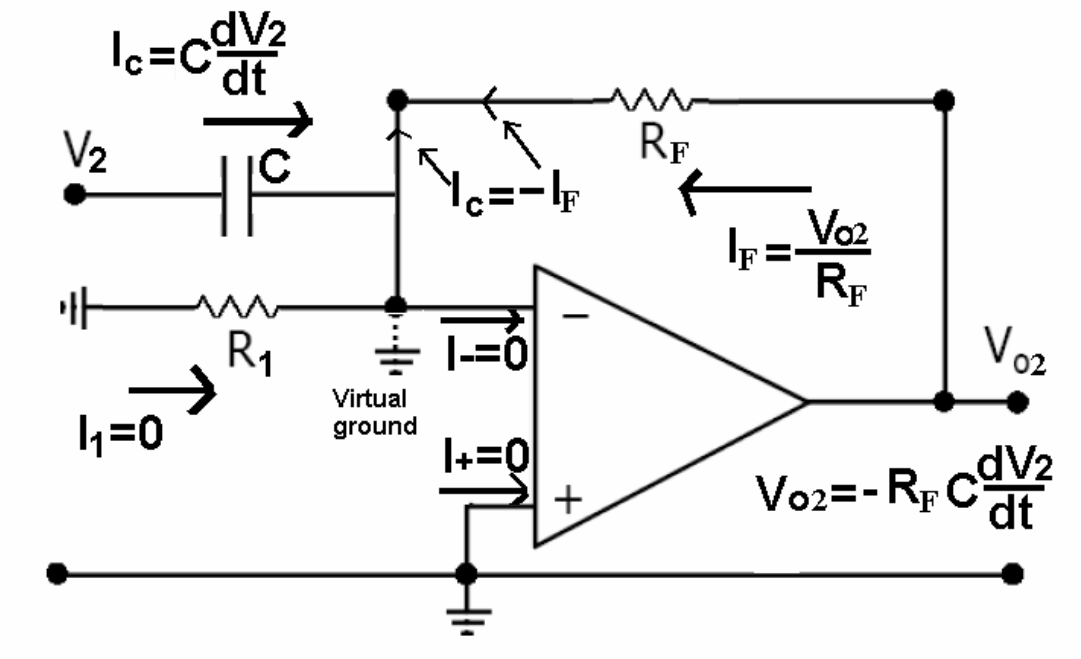

Figure-2 Circuit analysis for that V_1 is reduced to zero.

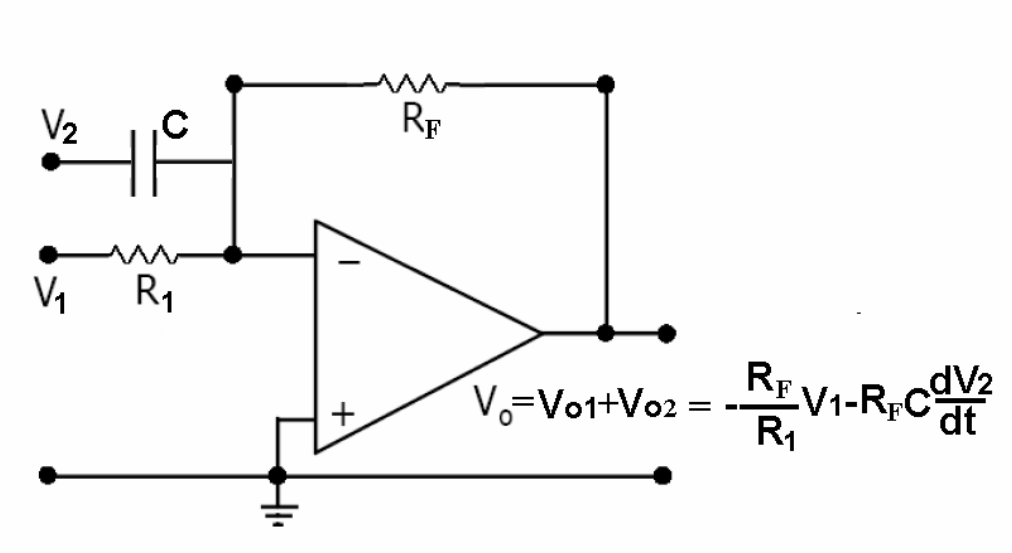

Figure-3 The final expression of the output voltage (the sum of the output voltages given in Figure 2 and 3).