GREEN UNIVERSITY OF BANGLADESH

Department of Computer Science & Engineering

Group Assignment (Odd)

Course Code: EEE-203

Course Title: Electronic Devices and Circuits & Pulse Techniques

Date of Submission : 30.04.2021

Submitted to:	Submitted by:
Name : Md. Shariful Islam	Name : Jakirul Islam
Designation : Lecture	ID : 193002101
Dept : EEE	Section : 193(DC)
Green University Of Bangladesh	Dept. : CSE

Remark

Ans to the Q.NO: 1

Given that,

$$V_0 = -10V_1 + 5\frac{dV_2}{dt} + 2\int V_3 dt$$

$$\Rightarrow V_0 = -\left(10V_1 + 5\frac{dV_2}{dt} - 2\int V_3 dt\right)$$

for V_1,

$$V_0 = 10V_1$$

let, $R_f = 68.1\ \Omega$

$R_i = 6.9\ \Omega$

for V_2,

$$V_0 = -5\frac{dV_2}{dt}$$

$\therefore$ let, $R = 6.9\ \Omega$

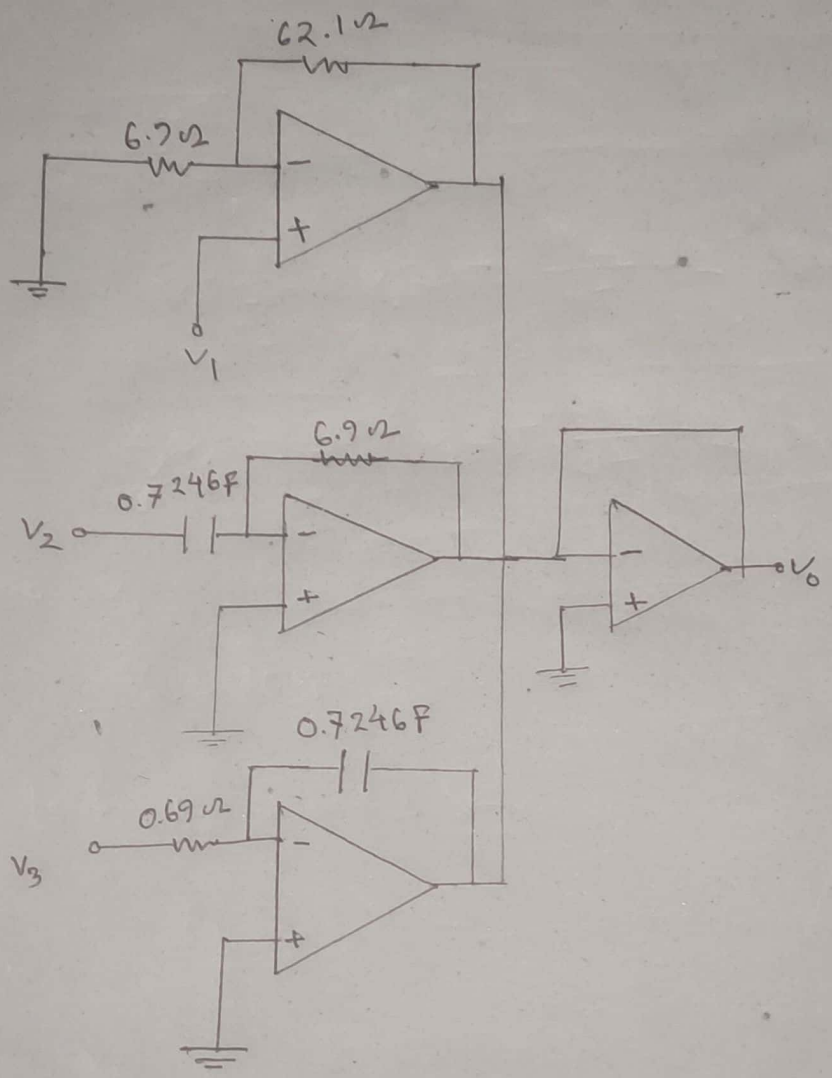
$C = 0.7246\ F$

for, V_3,

$$V_0 = -2\int V_3 dt$$

$\therefore$ let, $R = 0.69\ \Omega$

$C = 0.7246\ F$



Ans to the Q.NO: 2

Given that,

$$V_0 = 5V_1 - 10\frac{dV_2}{dt} + 2\int V_3\,dt$$

$$\Rightarrow V_0 = -\left(-5V_1 + 10\frac{dV_2}{dt} - 2\int V_3\,dt\right)$$

For, V_1,

$$V_0 = -5V_1$$

$\therefore$ let, $R_f = 34.5\,\Omega$

$R_i = 6.9\,\Omega$

For, V_2,

$$V_0 = 10\frac{dV_2}{dt}$$

$\therefore$ let, $R = 6.9\,\Omega$

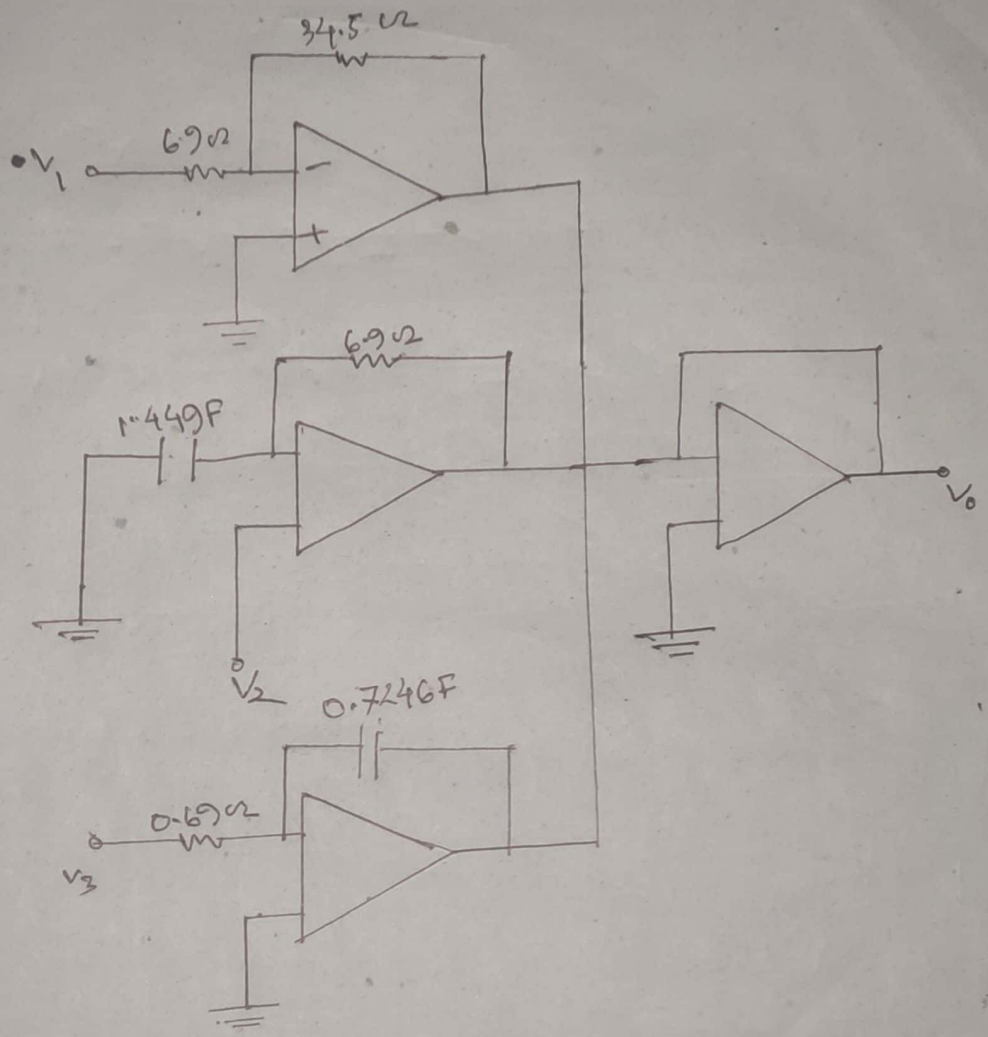
$C = 1.449\,F$

For, V_3,

$$V_0 = -2\int V_3\,dt$$

$\therefore$ let, $R = 0.69\,\Omega$

$C = 0.7246\,F$



Ans to the Q.no: 3

Given that,

$$V_0 = -\int (V_1 + 4V_2 + 10V_3)\,dt$$

$$\Rightarrow V_0 = \int (-V_1 - 4V_2 - 10V_3)\,dt$$

For V_1,

$$V_0 = -\int V_1\,dt$$

$\therefore$ let, $R = 6.9\Omega$

$C = 0.1449F$.

For V_2, $V_0 = -\int 4V_2\,dt$

$\therefore$ let, $R = 6.9\Omega$

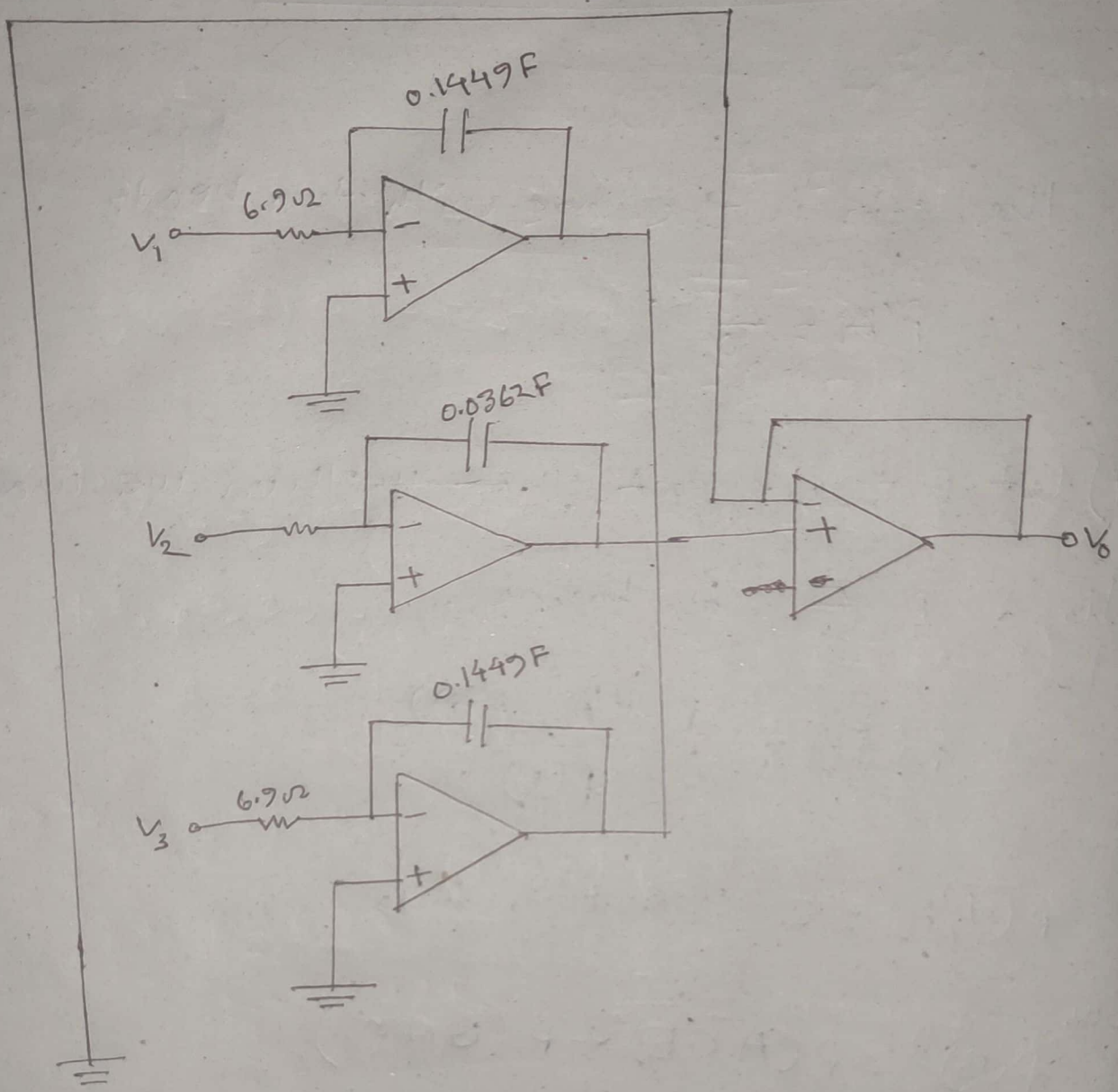
$C = 0.0362F$

For V_3,

$$V_0 = -10\int V_3\,dt$$

let, $R = 6.9\Omega$

$C = 0.0144F$



Ans to the Q.no: 4

Given that,

$R = 50k\Omega = 50\times10^{3}\Omega$

$C = 10\mu F = 1\times10^{-5}F$

$$\frac{dv_i(t)}{dt} = \begin{cases} 20\ Vs^{-1} & 0 \le t < 5\ ms \\ -10\ Vs^{-1} & 5 \le t < 15\ ms \end{cases}$$

For $\frac{dv_i(t)}{dt} = 20\ Vs^{-1}$

$v_0(t) = -50\times10^{3}\times1\times10^{-5}\times20$

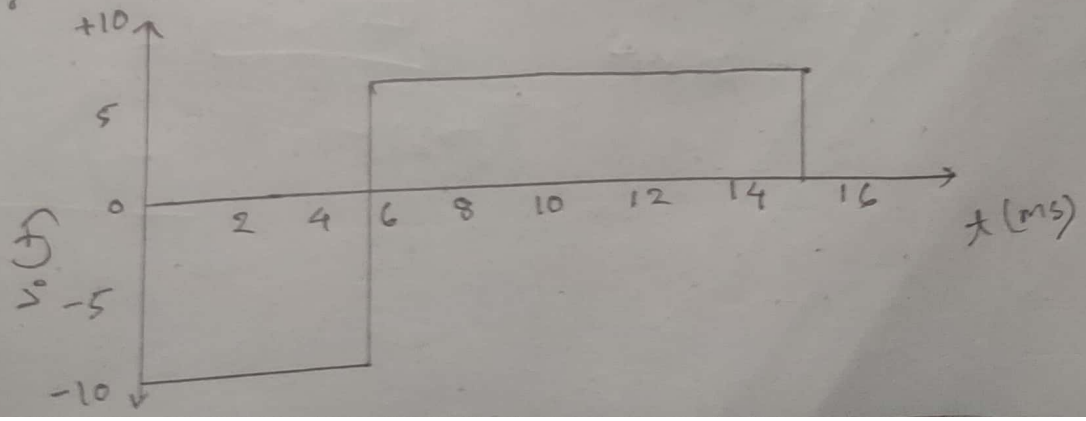
$= -10V$

For $\frac{dv_i(t)}{dt} = -10\ Vs^{-1}$

$v_0(t) = -50\times10^{3}\times1\times10^{-5}\times(-10)$

$= 5V$

waveform:



Ans to the Q.NO:5

Given that,

$R_f = 25 k\Omega$

$R_i = 10 k\Omega$

$V_i = 0.5 V$

a) we know that,

$$V_o = \left(-\frac{25 \times 10^3}{10 \times 10^3}\right) \times 0.5$$

$$= -1.25 V \quad \text{(Ans)}$$

b) the current through the $10 k\Omega$ resistor,

$$i = \frac{V_i - 0}{R_i}$$

$$= \frac{0.5 - 0}{10 \times 10^3}$$

$$= 5 \times 10^{-5} A$$

$$= 50 \mu A \quad \text{(Ans)}$$