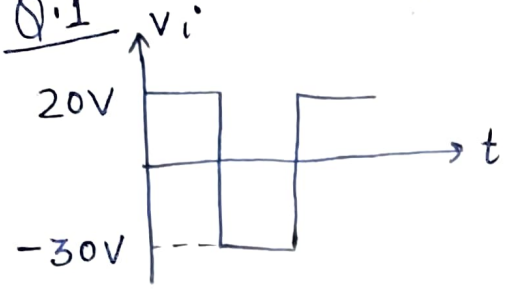
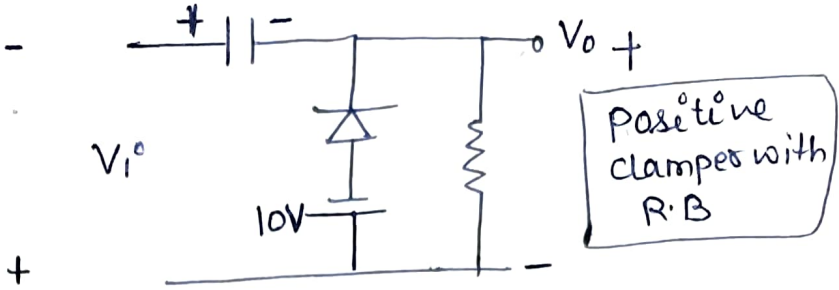
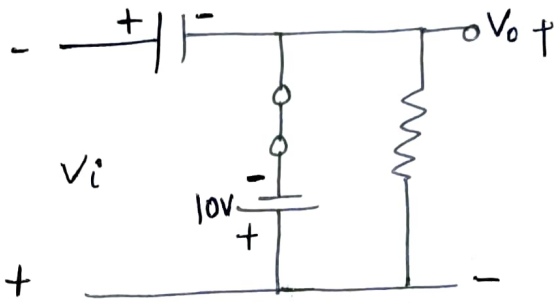
Q.1 Determine V_o for the n/w of fig. for the input indicated.





In -ve half cycle the diode is F.B, so it will be replace by a short circuit.



$-V_i - V_c + 10 = 0$

$-30 - V_c + 10 = 0$

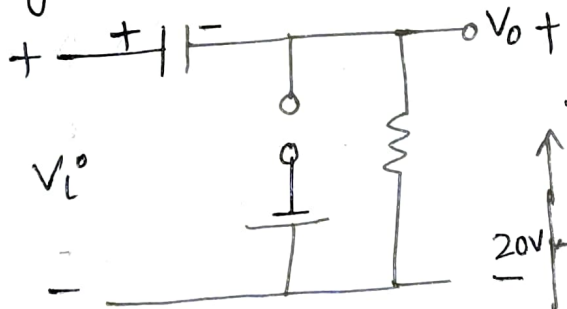
$-20 - V_c = 0$

$-V_c = 20$

$\boxed{V_c = -20}$, $\boxed{V_o = -10}$

In +ve half cycle the diode will be ~~reg~~ R.B, so it will replace by O.C, and then

Apply KVL



$V_i - V_c - V_o = 0$

$30 + 20 - V_o = 0$

$40 - V_o = 0$

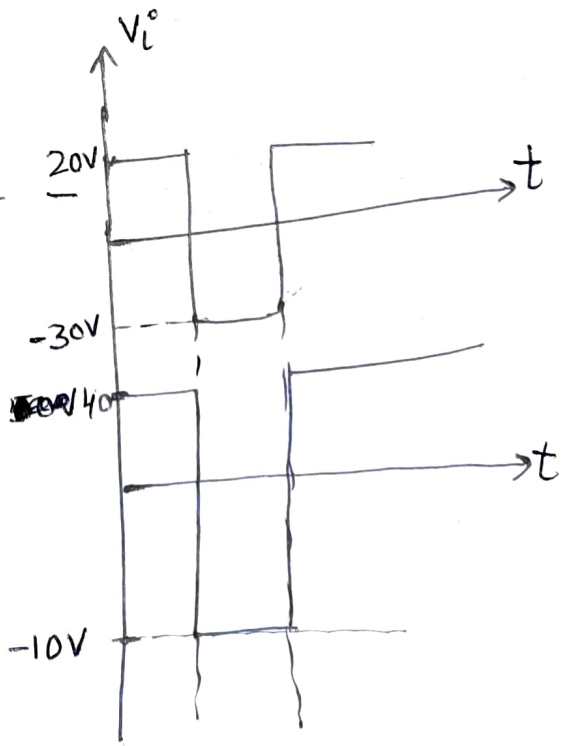
~~$V_o = 50$~~

$\boxed{V_o = 50}$

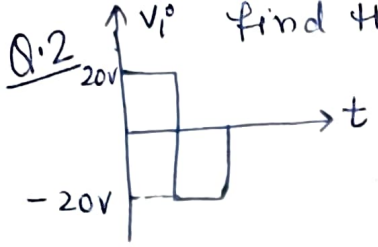
$40 - V_o = 0$

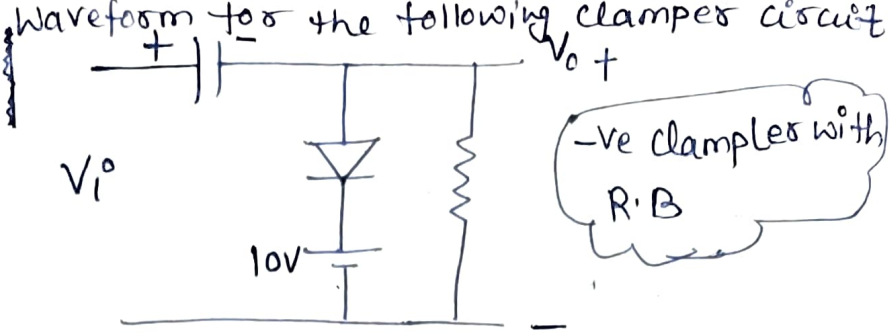
$+V_o = +40$

$\boxed{V_o = 40}$



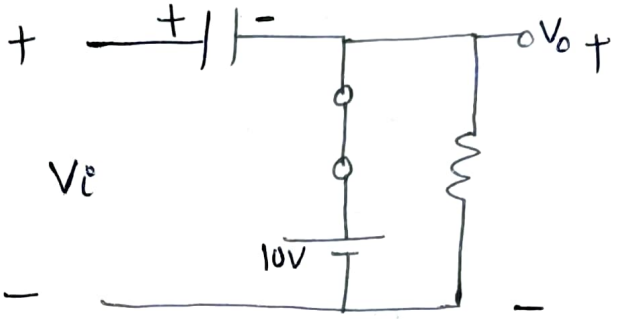
Q.2 Find the O/P waveform for the following clamper circuit





-ve clampler with R·B

In +ve half cycle the diode will be F·B, so it will be replace by short circuit and then Apply KVL·



$V_i^\circ - V_C - 10 = 0$

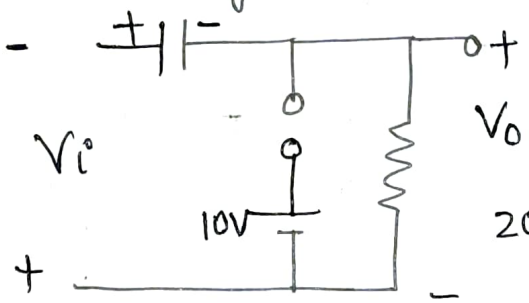
$20 - V_C - 10 = 0$

$10 - V_C = 0$

$-V_C = -10$

$\boxed{V_C = 10}$, $\boxed{V_o = 10}$

In -ve half cycle the diode will be R·B, so it will replace by o·c, and then Apply KVL



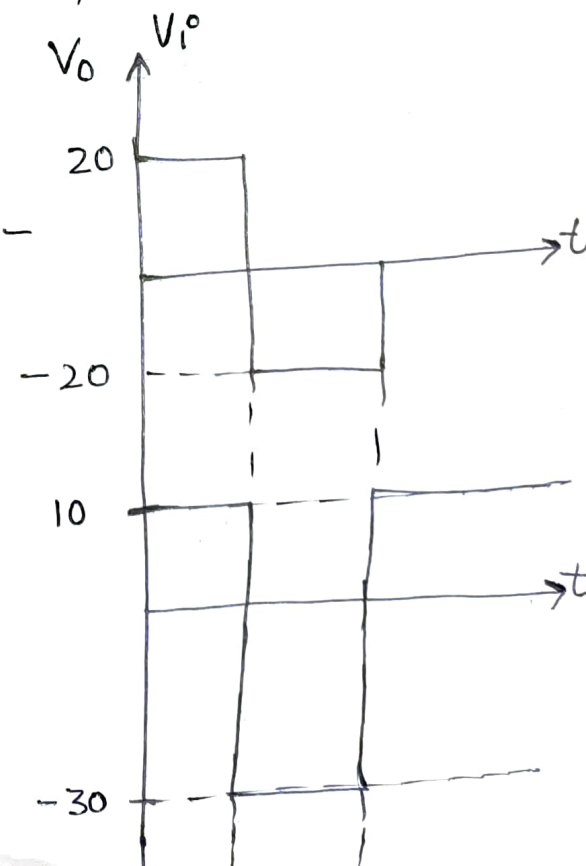
$-V_i^\circ - V_C - V_o = 0$

$-20 - 10 - V_o = 0$

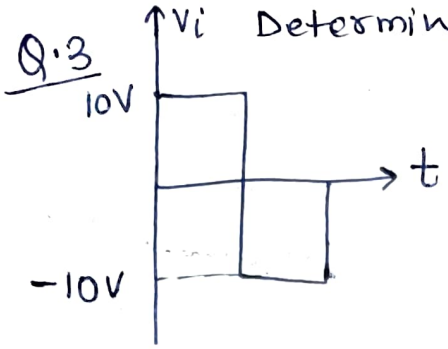
$-30 - V_o = 0$

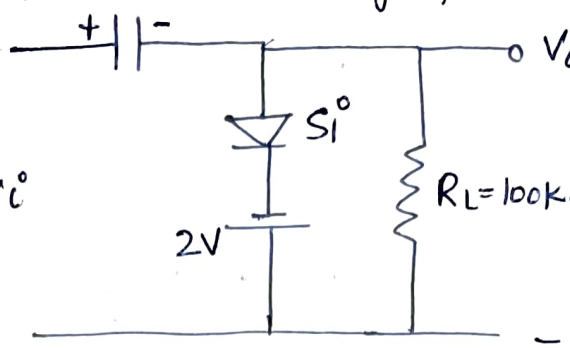
$-V_o = 30$

$\boxed{V_o = -30}$

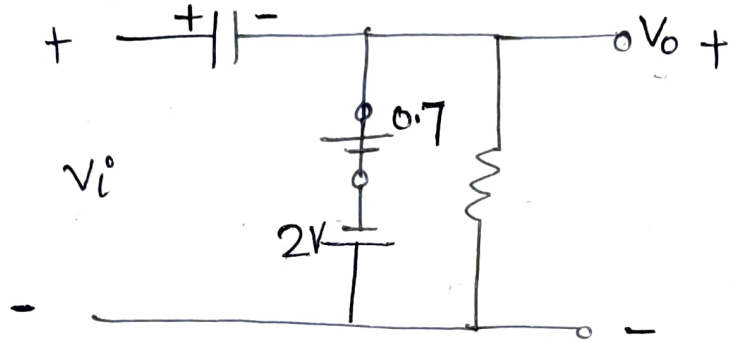


Q·3 Determine V_o for the n/w of fig for the I/P indicated





In +ve half cycle the diode is F·B, so it will replace by S·C



$V_i - V_C - 0.7 + 2 = 0$

$V_i - V_C + 1.3 = 0$

$10 - V_C + 1.3 = 0$

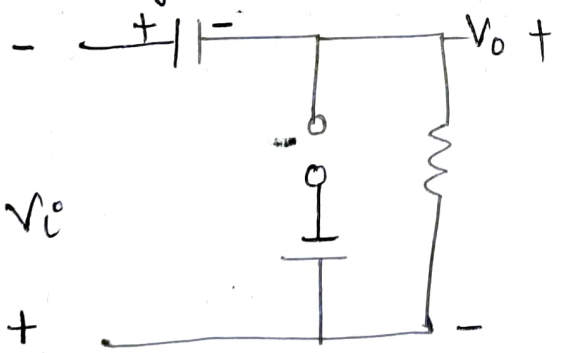
$11.3 - V_C = 0$

$-V_C = -11.3$

$V_C = 11.3V$

$V_o = -1.3V$

In -ve half cycle the diode is R·B, so it acts as O·C



$-V_i - V_C - V_o = 0$

$-10 - 11.3 - V_o = 0$

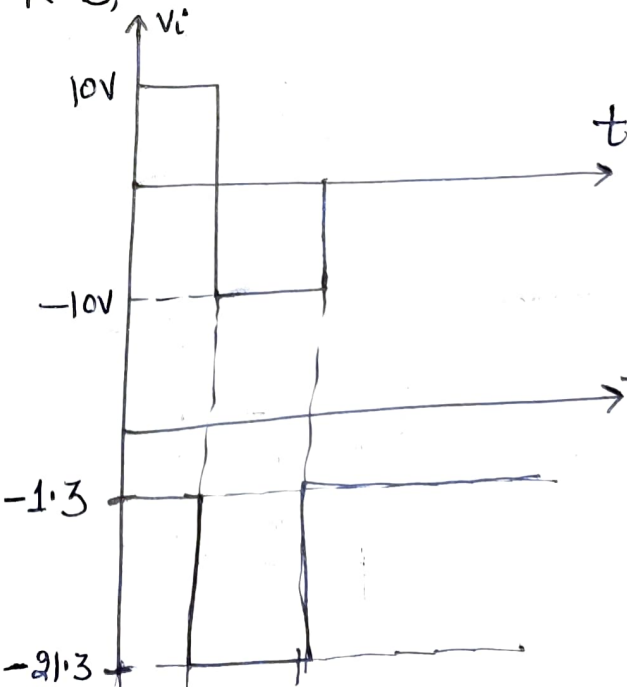
$-21.3 - V_o = 0$

$V_o = -21.3V$

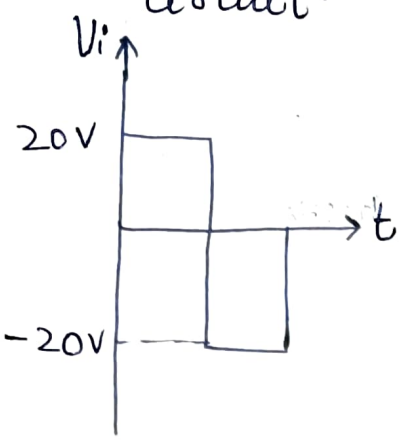
$-1.3 - (-21.3)$

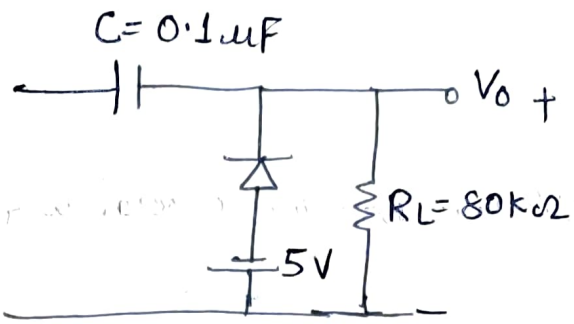
$-1.3 + 20$

20



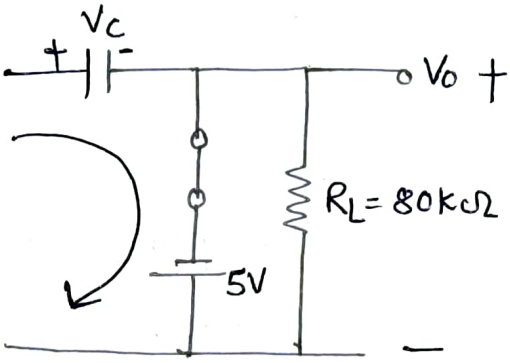
Q.4 find the O/P waveform for the following clamper circuit.





+ve clamper with R.B

In -ve half cycle the diode will be F.B, and act as a ~~open circuit~~ S.C. -



Apply KVL

$$-V_i - V_c + 5 = 0$$

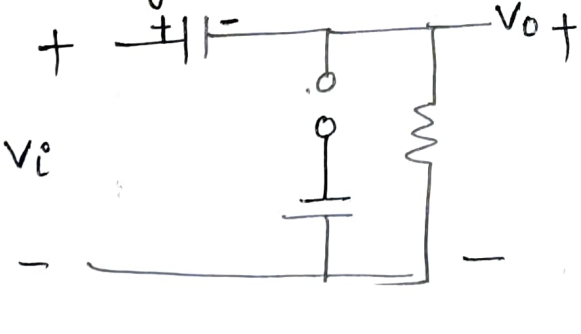
$$-20 - V_c + 5 = 0$$

$$-15 - V_c = 0$$

$$-V_c = 15$$

$$V_c = -15V, \quad V_o = -5V$$

In +ve half cycle, D → R.B → O.C

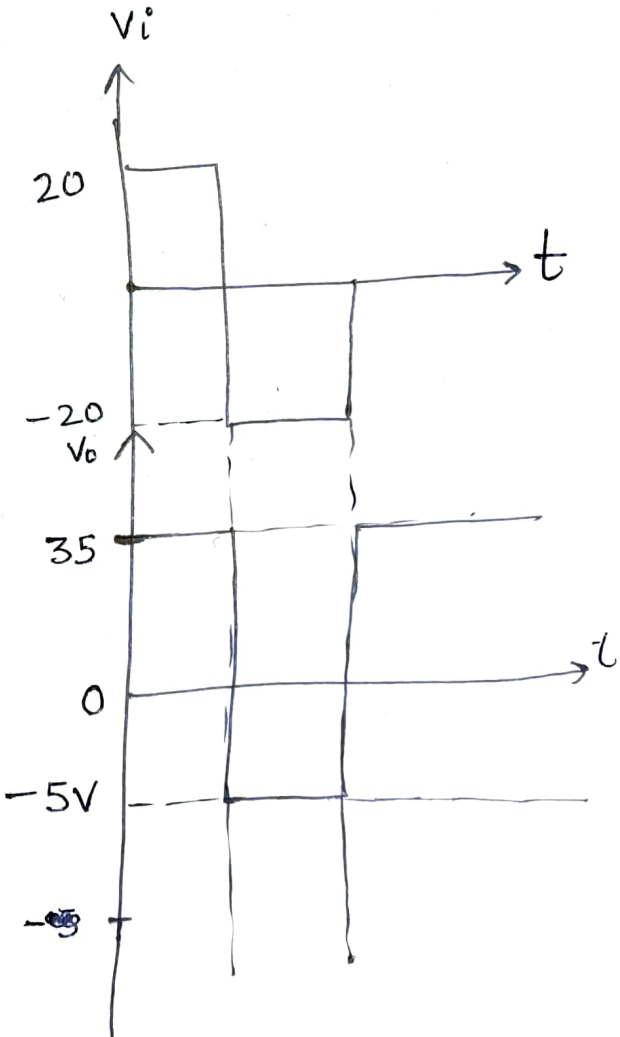


$$V_i - V_c - V_o = 0$$

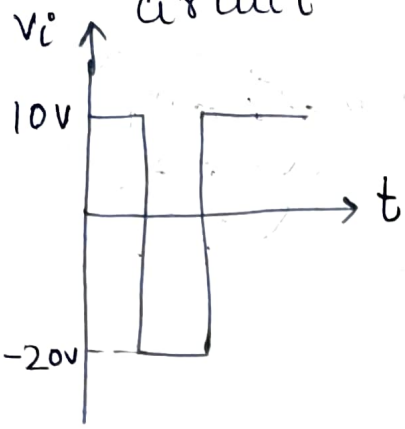
$$20 - (-15) - V_o = 0$$

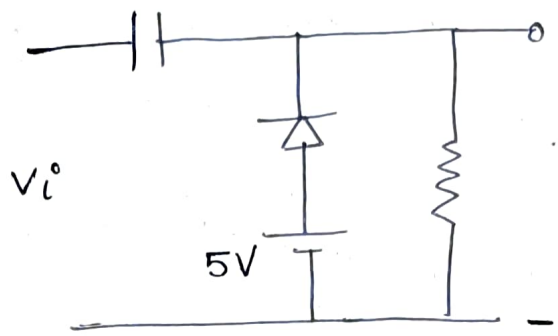
$$20 + 15 - V_o = 0$$

$$+V_o = +35$$



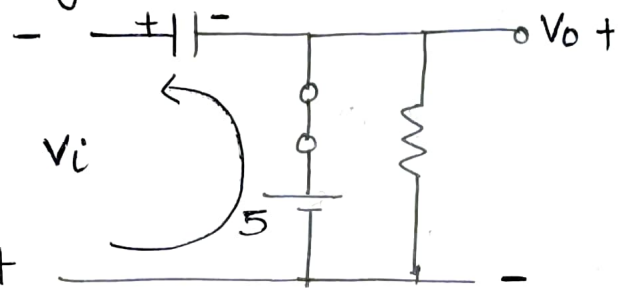
Q.5 find the O/P Wave form for the following clamper circuit.





+ve clamper with F.B

Soln In -ve half cycle D → F.B → S.C.



Apply KVL

$-V_i - V_c - 5 = 0$

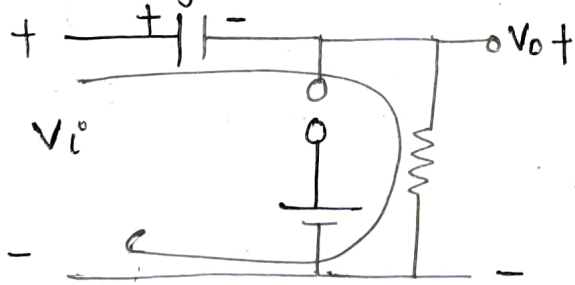
$-20 - V_c - 5 = 0$

$-25 - V_c = 0$

$-V_c = 25$

$V_c = -25$, $V_o = 5V$

In +ve half cycle D → R.B → O.C



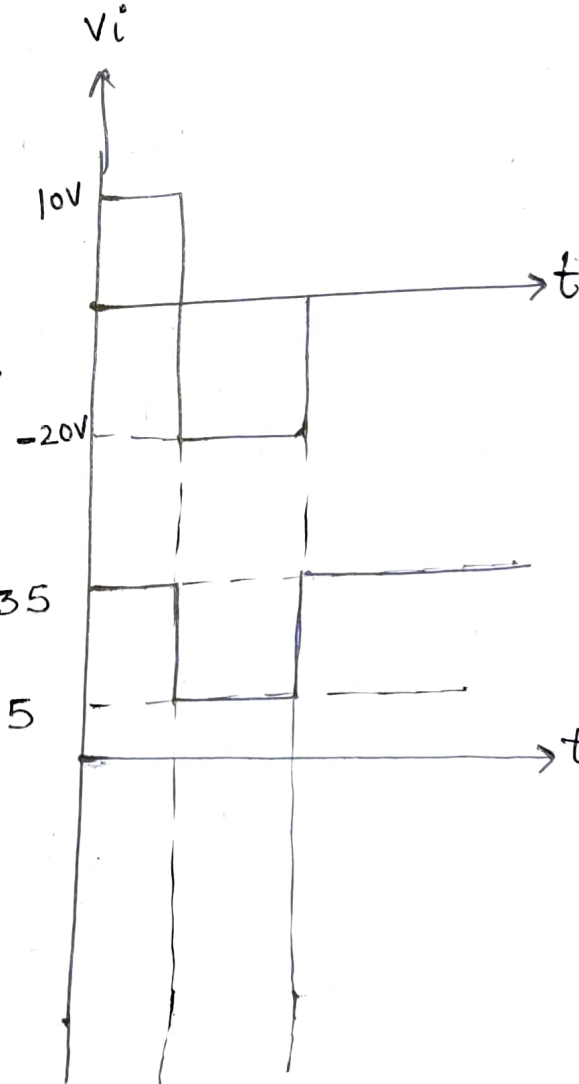
Apply KVL

$V_i - V_c - V_o = 0$

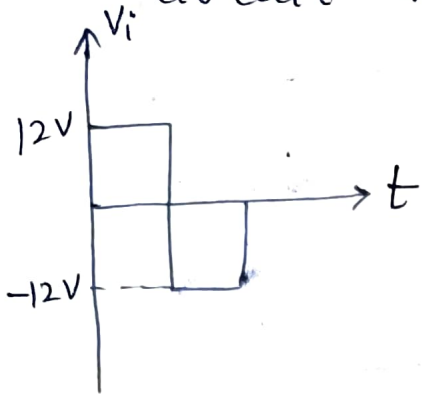
$10 - (-25) - V_o = 0$

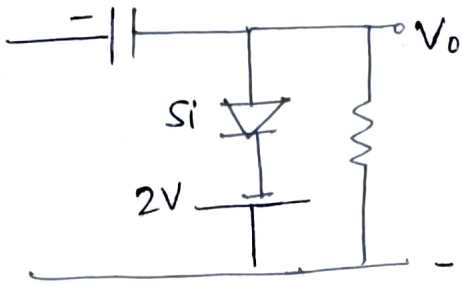
$10 + 25 - V_o = 0$

$V_o = 35V$



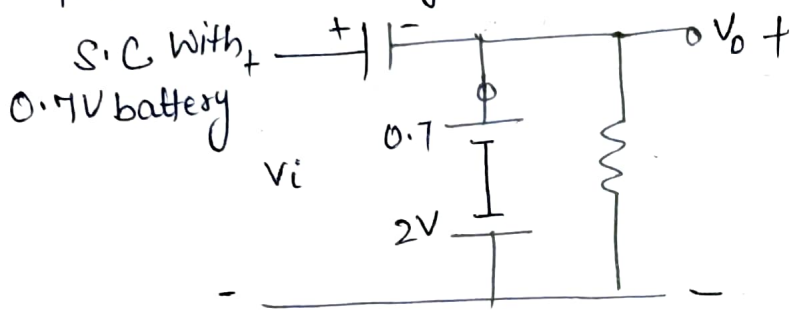
Q.6 Determine the V_o for the following clamper circuit and sketch the o/p waveform.





-ve clamper with F.B

for the +ve half cycle the diode will be F.B and replace by the

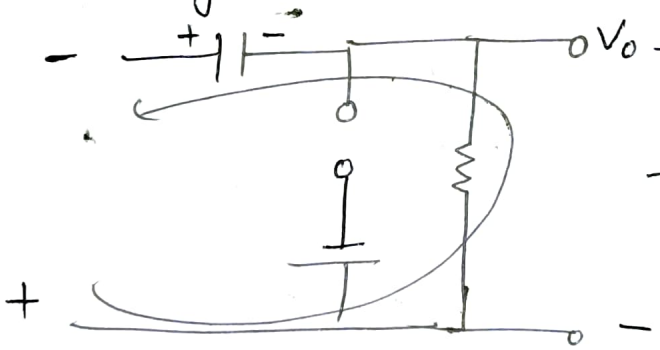


$V_i^{\circ} - V_C - 0.7 + 2 = 0$

$12 - V_C - 1.3 = 0$

$\boxed{V_C = 13.3V}$, $\boxed{V_o = -1.3V}$

for the -ve half cycle D → R.B → O.C.



Apply KVL

$-V_i^{\circ} - V_C - V_o = 0$

$-12 - 13.3 - V_o = 0$

$-25.3 - V_o = 0$

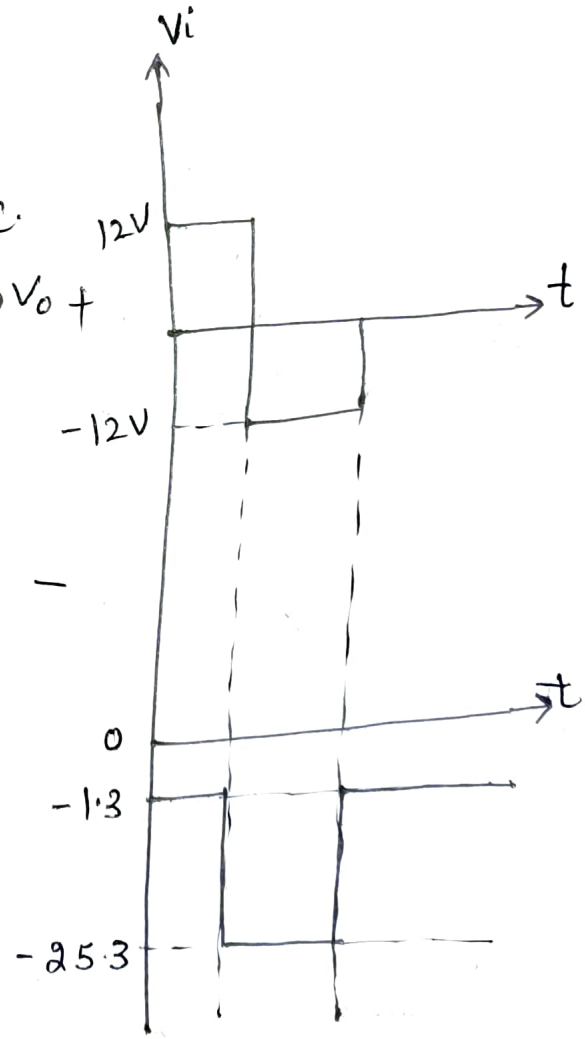
$-V_o = 25.3$

$\boxed{V_o = -25.3}$

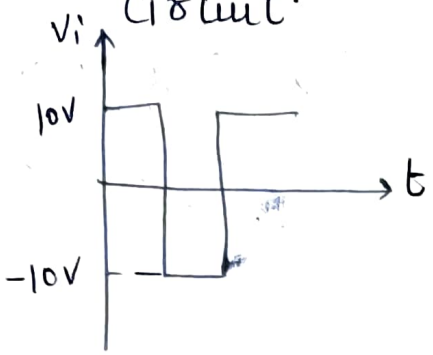
$-1.3 - (-25.3)$

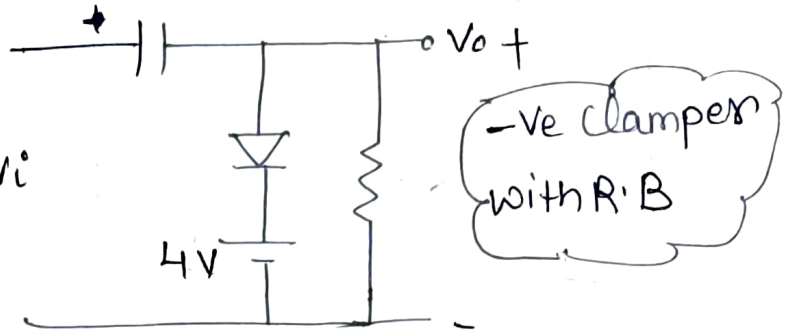
$-1.3 + 25.3$

$\boxed{24V}$

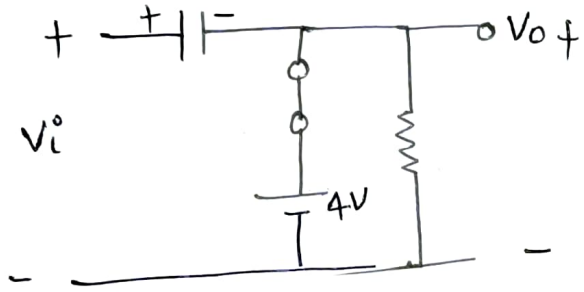


Q.7 Sketch the output waveform for the following clamper circuit.





for the +ve half cycle the Diode → F·B → S·C



$V_i - V_C - 4 = 0$

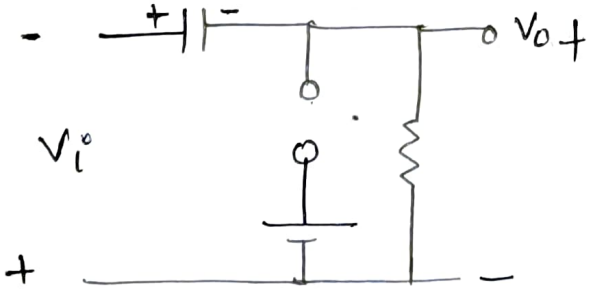
$10 - V_C - 4 = 0$

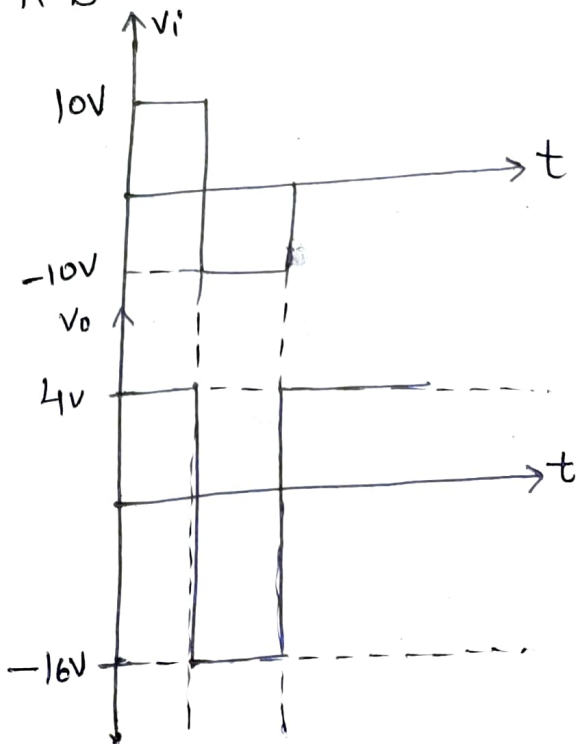
$6 - V_C = 0$

$-V_C = -6$

$V_C = 6V$ $\quad V_O = 4V$

for the -ve half cycle the Diode → R·B → O·C





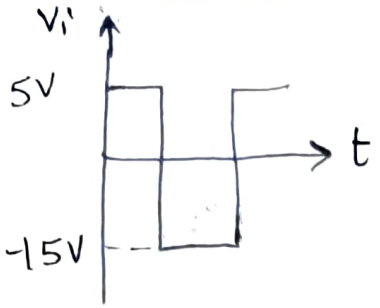
$-V_i - V_C - V_O = 0$

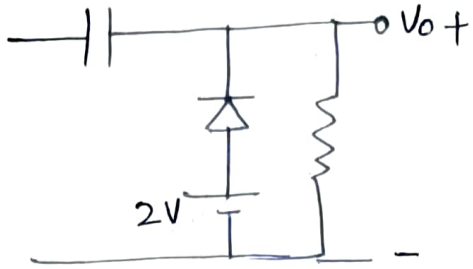
$-10 - 6 - V_O = 0$

$-16 - V_O = 0$

$V_O = -16V$

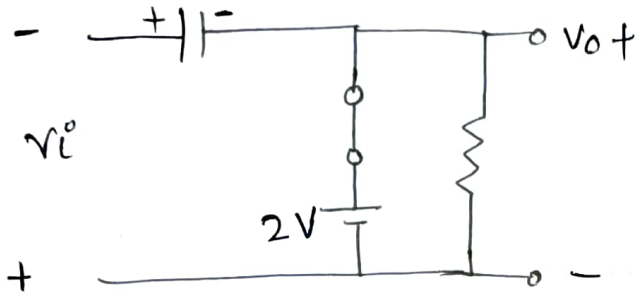
Q.8 Determine V_o for the n/w of figure for the I/P indicated.





+ve clamper with F.B

for the -ve half cycle the Diode → F.B → S.C



$-V_i - V_c - 2 = 0$

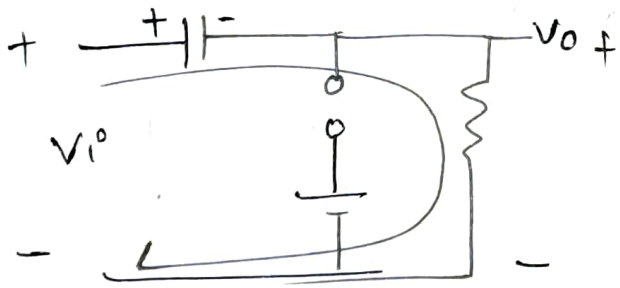
$-15 - V_c - 2 = 0$

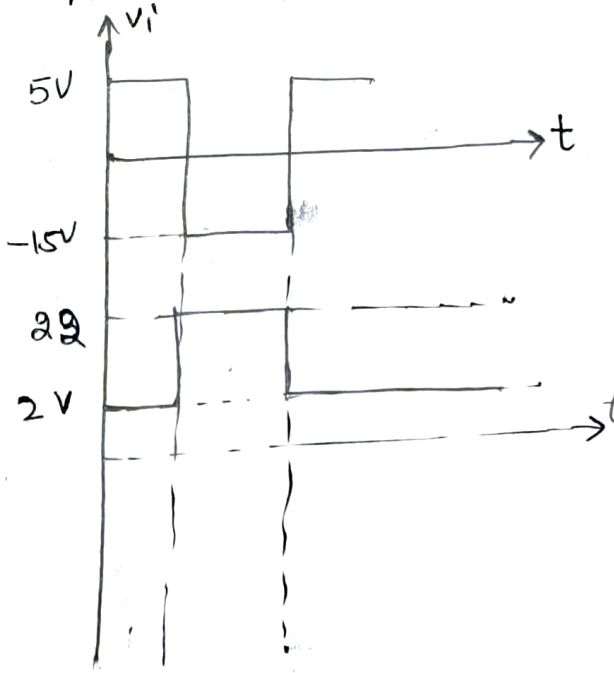
$-17 - V_c = 0$

$-V_c = 17$

$\boxed{V_c = -17}$ $\quad V_o = 2V$

for the +ve half cycle the diode is R.B → O.C,





$V_i - V_c - V_o = 0$

$5 - (-17) - V_o = 0$

$5 + 17 - V_o = 0$

$22 - V_o = 0$

$+V_o = +22$

$\boxed{V_o = 22}$