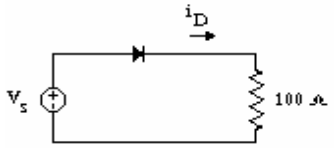
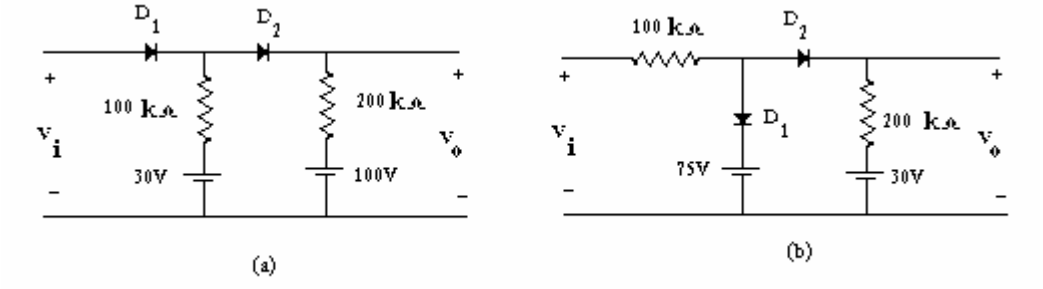
1) The source voltage $v_s = 1.1 + 0.1\sin 1000t$ is placed across a series combination of a diode and a 100Ω load resistance, as shown in figure find the current i_D if

$\eta V_T = 40\,mV$

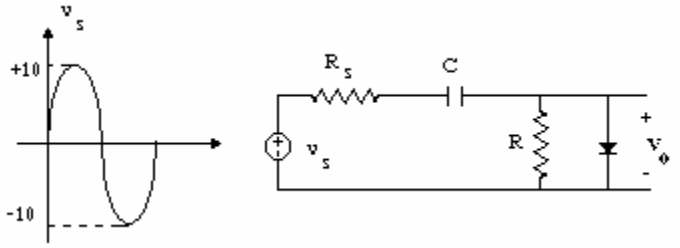
$V_\gamma = 0.7V$



2) Sketch transfer function of each clipper circuit shown in figure. Assume ideal diodes.



3) An ideal diode 10KHz sinusoidal voltage source whose peak excursions are $\pm 10V$ with respect to ground is applied to the diode clamping circuit of the figure below , Assume $R = \infty, R_s = 0, C = 1\mu F,$ the diode has $R_r = \infty, R_f = 0, V_\gamma = 0$. Sketch output waveform.

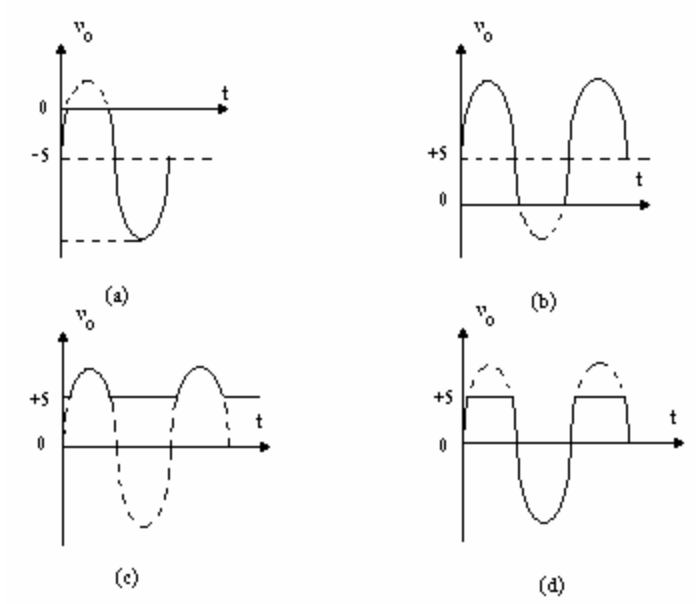


4) The signal shown in the figure problem (3) with a frequency of 1KHz is applied to the circuit , with values $R = 10k\Omega, R_s = 0, C = 1\mu F,\ R_r = \infty, R_f = 0, V_\gamma = 0$.

   a) Sketch the output waveform, v_o.

   b) Repeat part (a) if $R = 1K\Omega$ and $C = 0.1\mu F$.

5) What type of clipper is needed to obtain the waveforms shown in below ? Assume the input is 10sin t volts. Draw the circuits.


v_o
0
t
-5
(a)
v_o
+5
0
t
(b)
v_o
+5
0
t
(c)
v_o
+5
0
t
(d)