# Clippers. Circuits

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Introduction
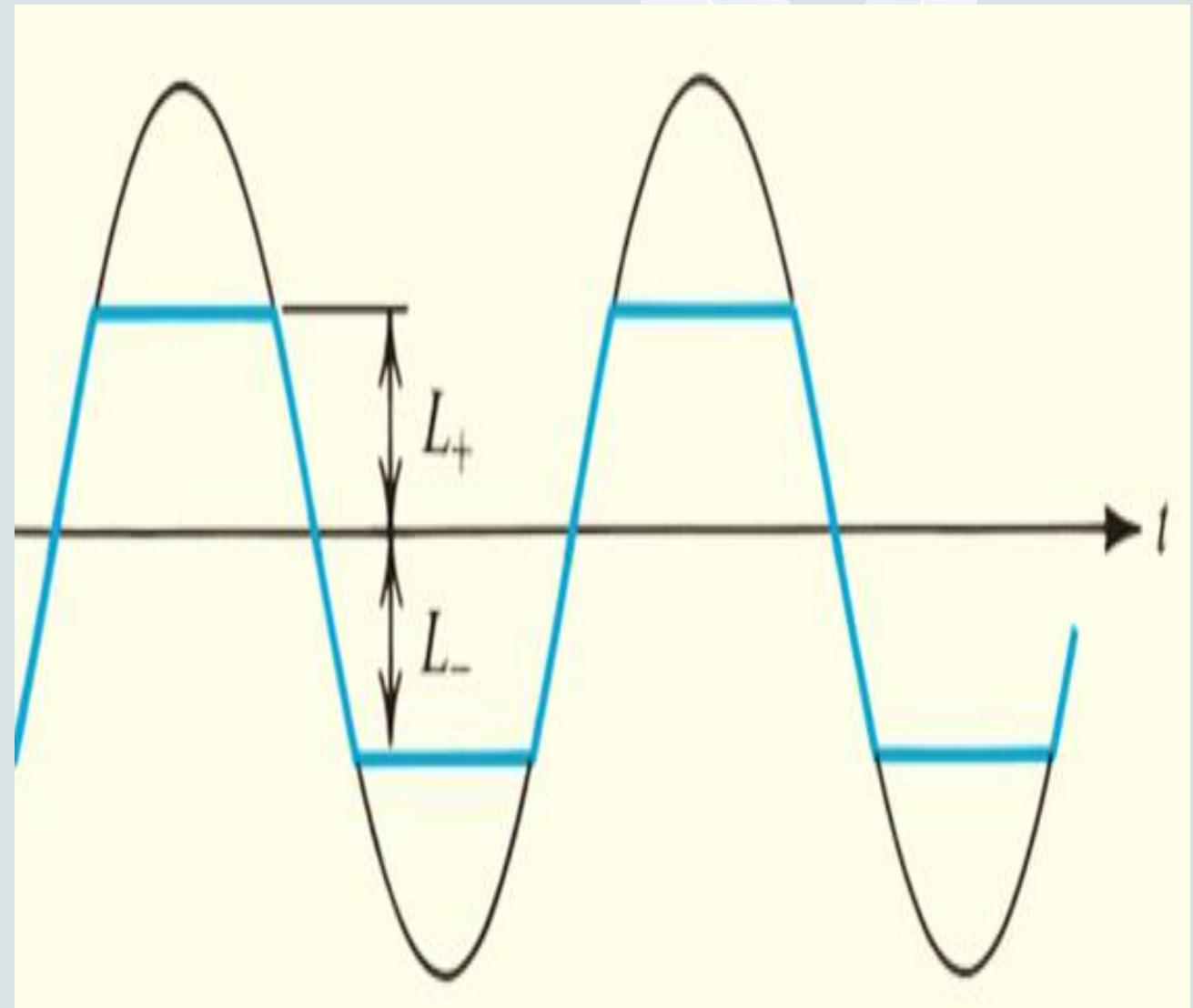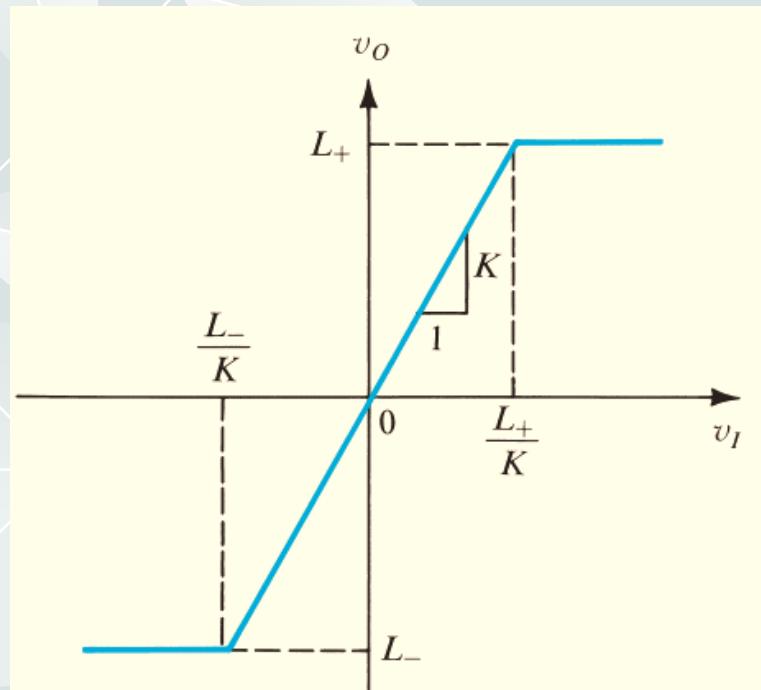
Diodes can be combined with resistors to provide simple realizations of the limiter function.

(a)

(b)

3

Example

+4

-4

10 kΩ

v_I 5 V   5 V v_O

10 kΩ   10 kΩ
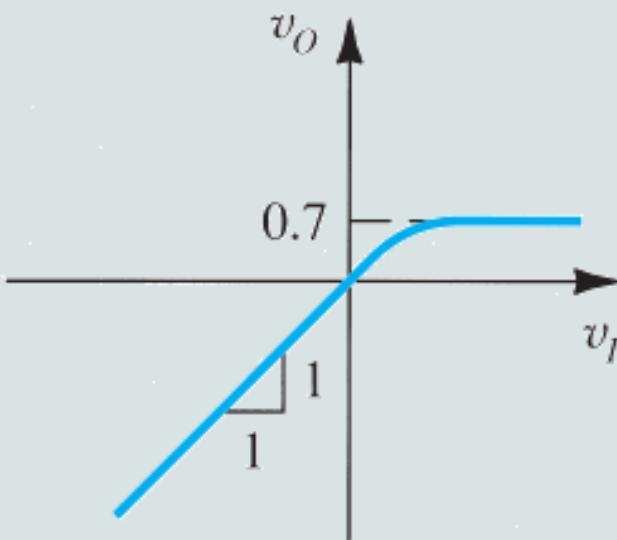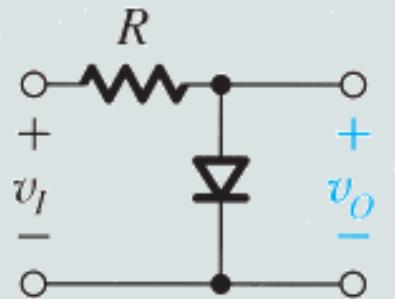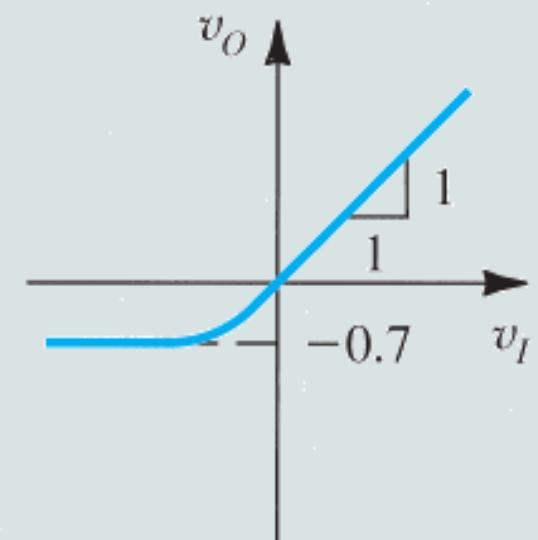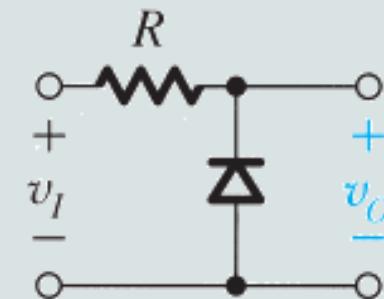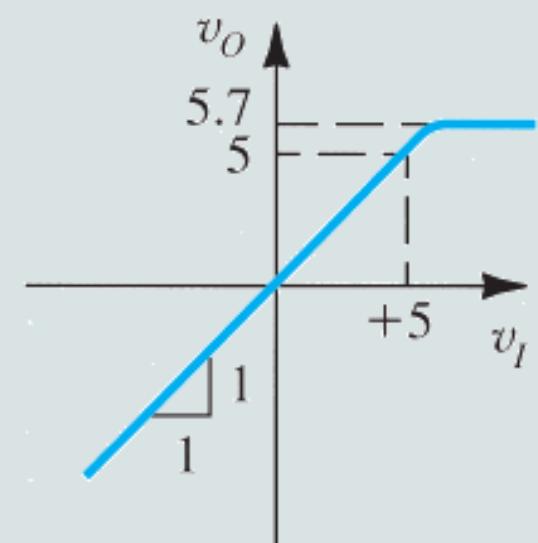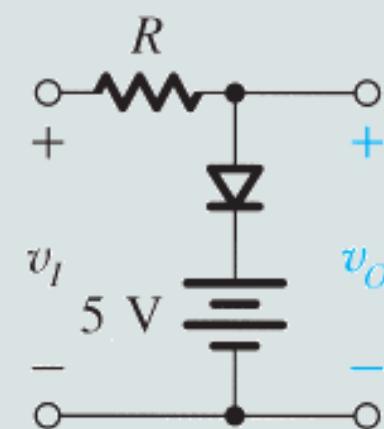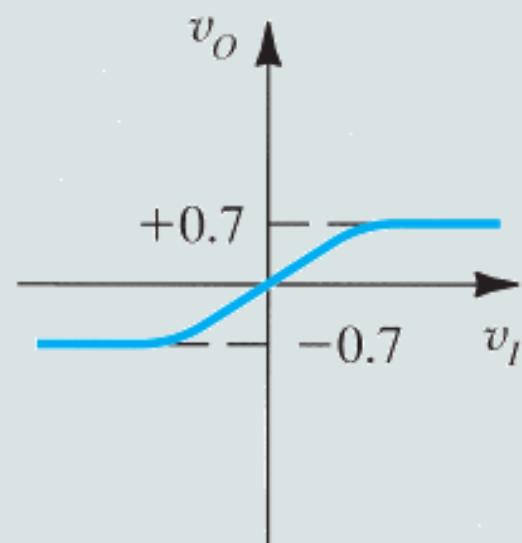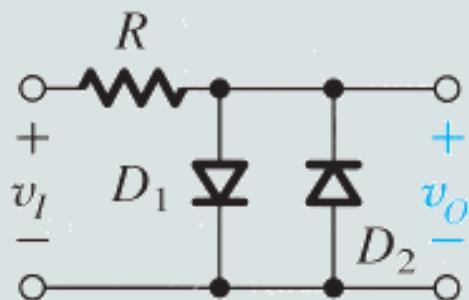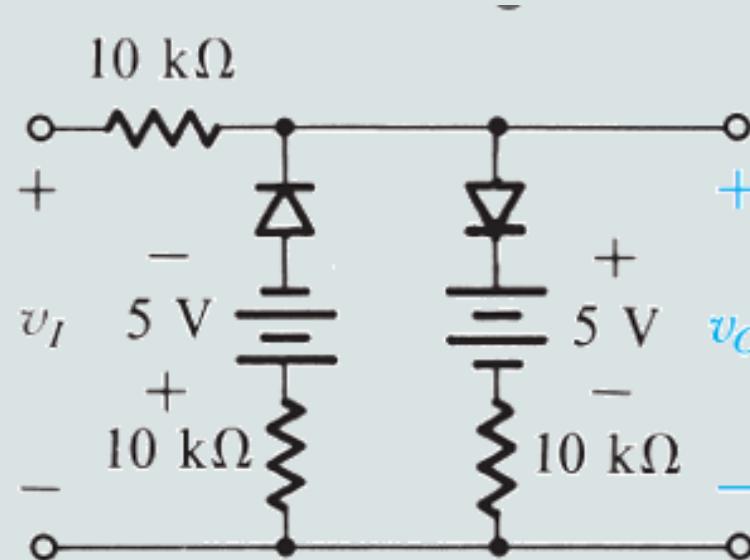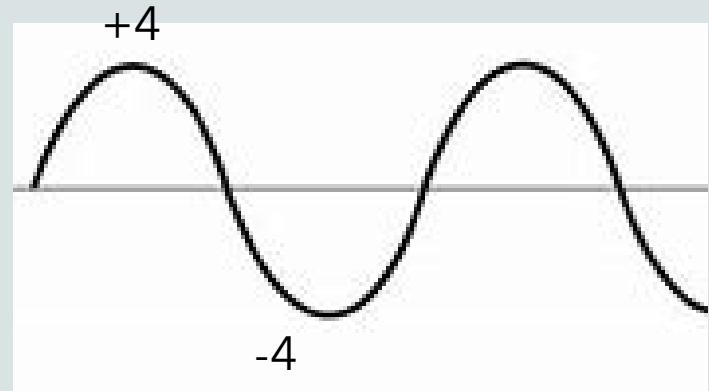
Example

$$5 \leq v_I \leq -5$$

Example

+15

-15
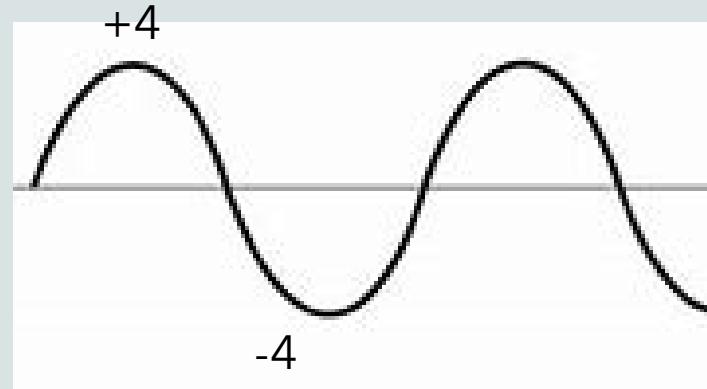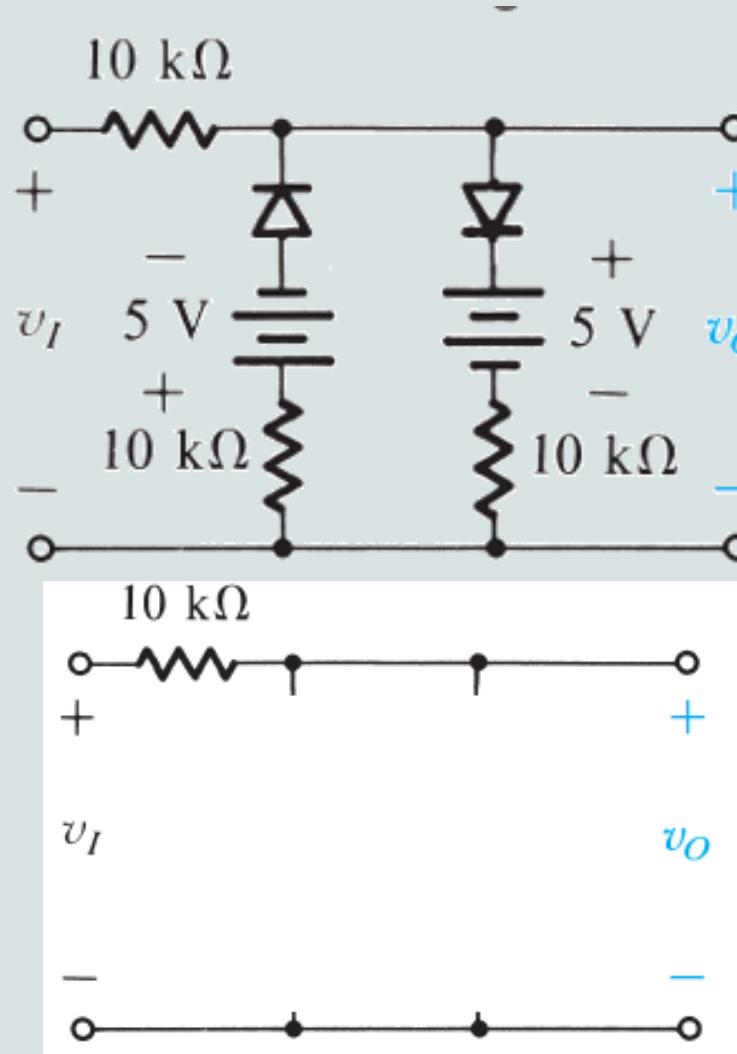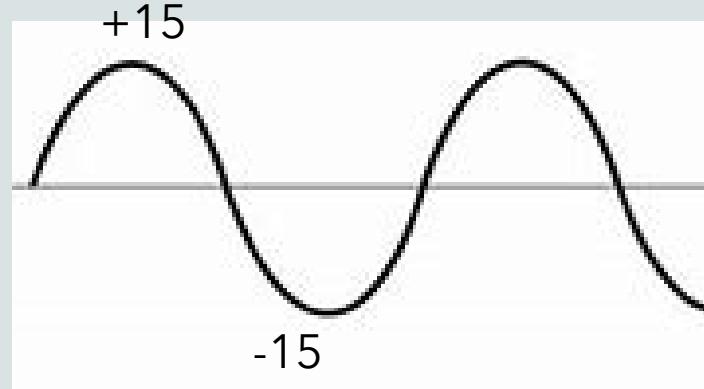
Super position

@ $v_I = 0$ $\rightarrow$ $i = \dfrac{5}{20k} = 0.25\ mA$

$v_o = 5V - i \cdot 10k = 5 - 2.5$

$\quad\quad\quad\quad\quad = 2.5V$ ↑

Example

+15

-15
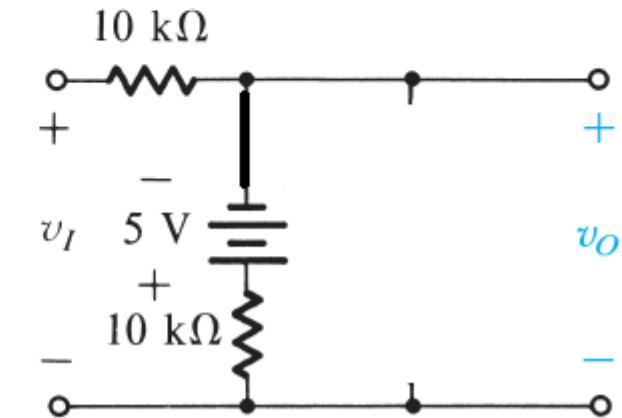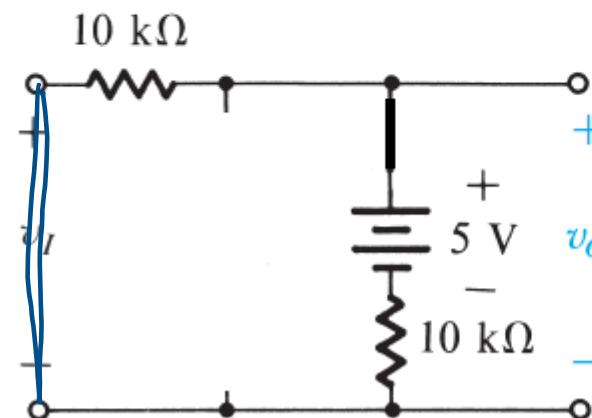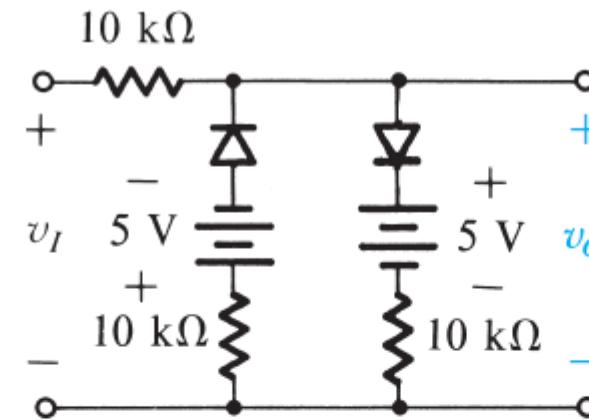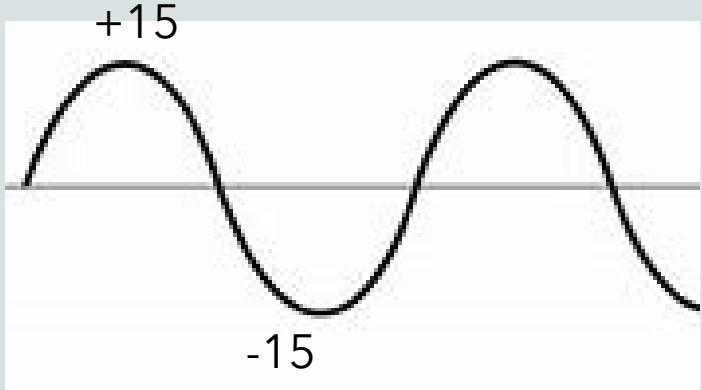
Super position

@ $v_I = 0$ $\rightarrow$ $i = \dfrac{5}{20k} = 0.25$ mA

$v_o = 5v - i * 10k = 5 - 2.5$
$= 2.5V$ ↑
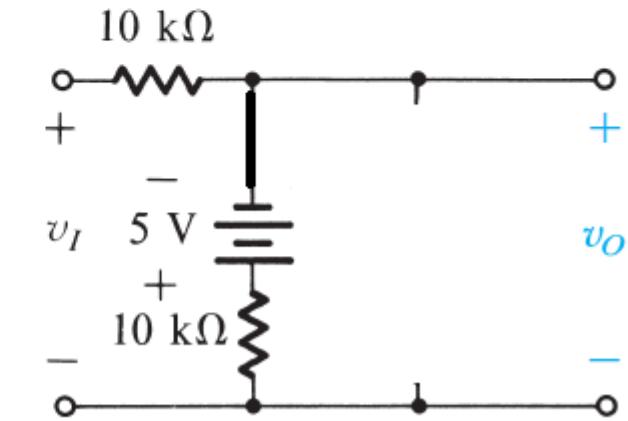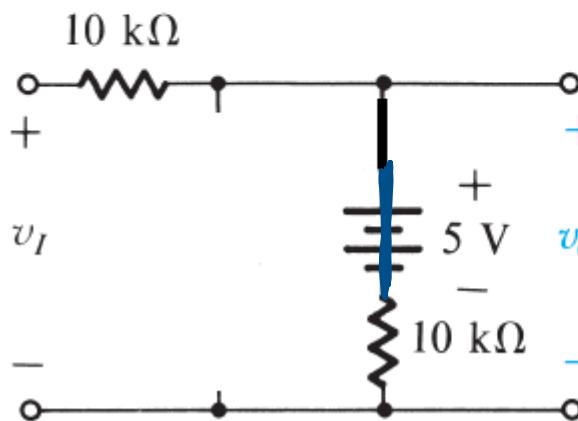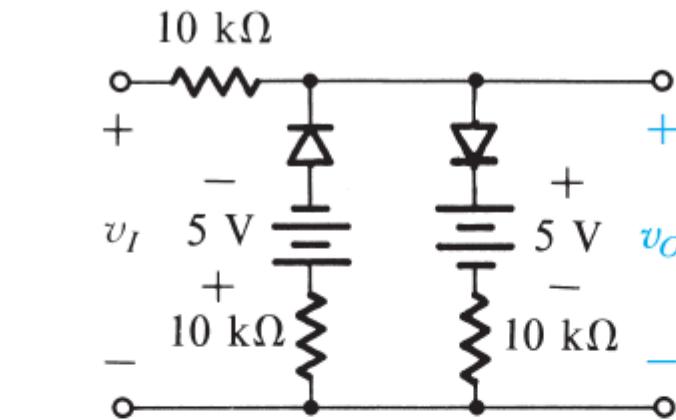
@ 5V=0

$v_o = v_I \dfrac{10k}{20k} = 0.5 \, v_I$ ↑

$\therefore$ $v_o = 0.5 \, v_I + 2.5$

Example

+15

-15

@ -ve cycle

$$v_O = 2.5 v_I - 2.5$$

Example

Thank you