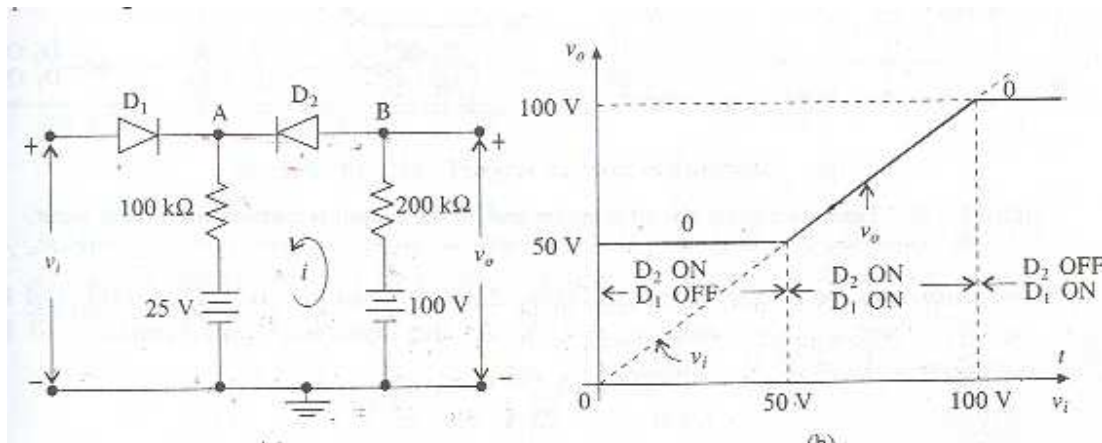


**Problems on clippers :**

1. The input voltage  $V_i$  to the two level clipper shown in figure varies linearly from 0 to 150 V .Sketch the output voltage  $V_o$  to the same time scale as the input voltage . assume ideal diodes.

**Solution:**

**In the problems of clippers , every time we need to check the status of diodes, means for what value of input voltage diodes changes its state.**

Case(i):

If  $V_i = 0V$  , **D1 OFF and D2 ON** then the circuit diagram will be redrawn as,

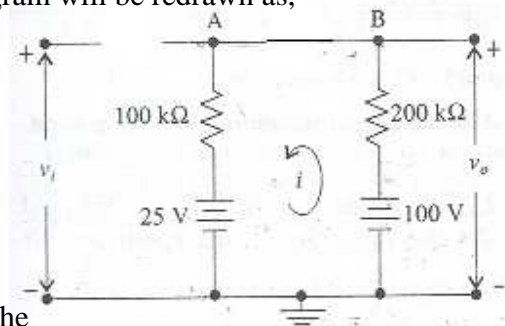
Then  $V_o = 100 - i(200K)$

Where  $i = (100 - 25) / 300K$

Now  $V_o = 50 V$

D1 will tries to ON when only voltage at the anode (input voltage) of D1 is equal to 50 V since voltage at the cathode of D1 is 50 V

So if  $V_i < 50V$  ,  $V_o = 50 V$

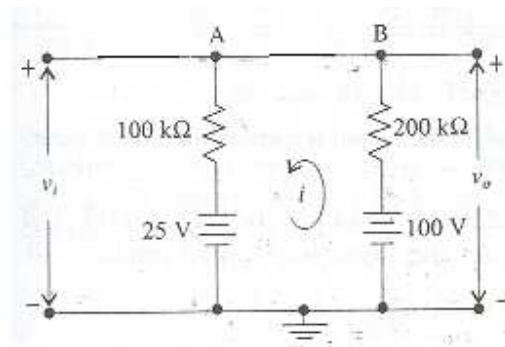


but if  $V_i = 50V$  then D1 will be in ON state .

case(ii): if  $V_i = 50V$  then **D1 ON and D2 is also in ON** state. Then the circuit diagram is redrawn as,

## CLIPPERS

## UNIT-2



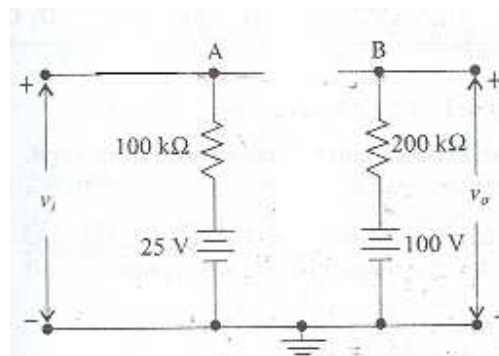
here  $V_o = V_i$

D2 will try to turn OFF when only voltage at the cathode (input voltage) of D2 is equal to 100 V since voltage at the anode of D2 is 100 V

if  $50 < V_i < 100\text{V}$  then  $V_o = V_i$

here if  $V_i$  equals 100V then D2 stops conducting.

Case(iii): if  $V_i$  equals 100V then **D1 ON and D2 OFF**. Then the circuit diagram is redrawn as,



Here  $V_o = 100\text{ V}$

If  $V_i > 100\text{ V}$ , then  $V_o = 100\text{ V}$