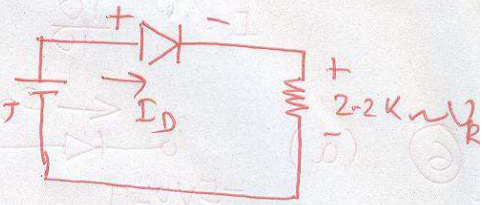
B1

④ I_D, V_R

$$I_D = \left[\frac{30 - 0.7}{2.2}\right]$$



I_D = 13.32 m. ampere

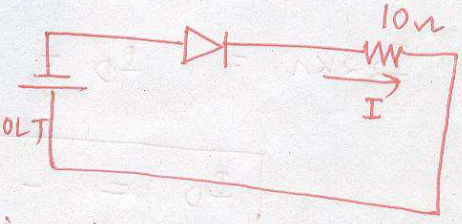
$V_R = I_D R_D$ = 29.3 Volt

OR, V_R = 30 − 0.7 = 29.3 VOLT

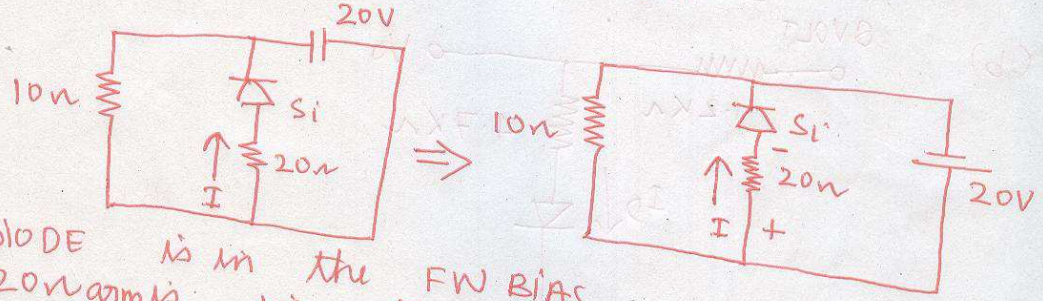
⑤ (a) DIODE is REVERSE BIAS.

$I = 0$

CIRCUIT is OPEN CIRCUITED.



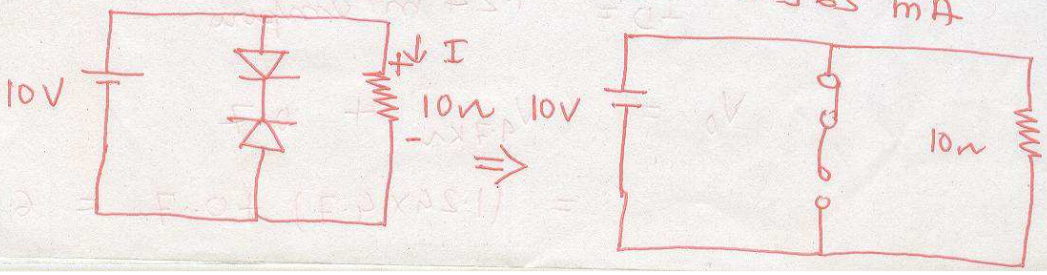
(b)



DIODE is in the FW BIAS
20Ω arm is in the parallel to the power source.

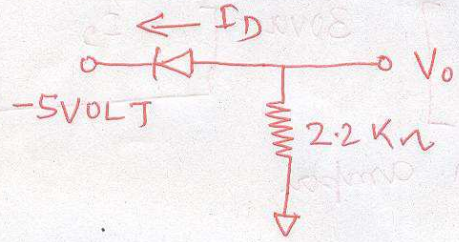
$$I = \frac{20 - 0.7}{20} = 0.965 \text{ mA}$$

(c)



$I = \frac{10}{10} = 01$ ampere

(6) (a)



$V_o = 0.7 - 5$

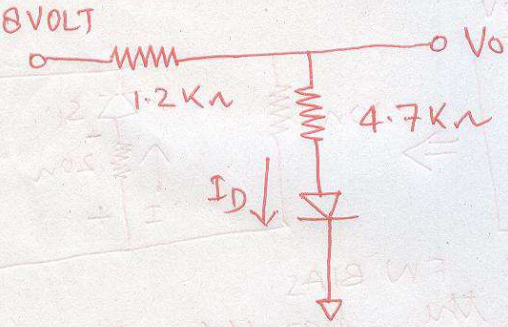
$V_o = -4.3$ VOLT

Since diode is series with the resistance then

$I_{2.2K\Omega} = I_D = \frac{V_o}{2.2} = -\frac{4.3}{2.2}$

$$I_D = -1.955 \text{ m ampere}$$

(b)



$I_D = \left[\frac{8 - 0.7}{1.2 + 4.7}\right] = \frac{7.3}{5.9}$

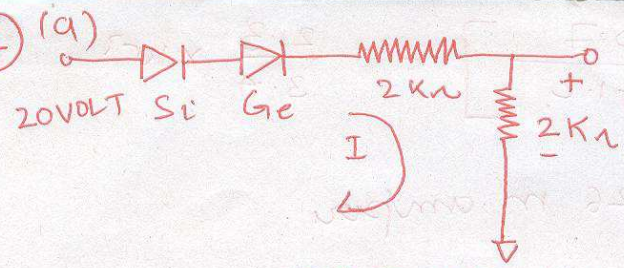
$I_D = 1.24$ m. ampere

$V_o = V_{4.7K\Omega} + 0.7$

$= (1.24 \times 4.7) + 0.7 = 6.53$ VOLT

B2

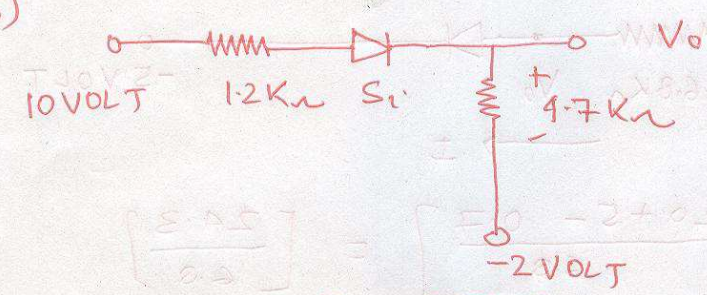
(7) (a)



$$I = \frac{20 - 0.7 - 0.3}{2+2} = \frac{19}{4} \text{ m.ampere}$$

$$V_o = IR = \frac{19}{2} \text{ ampere VOLT}$$

(b)



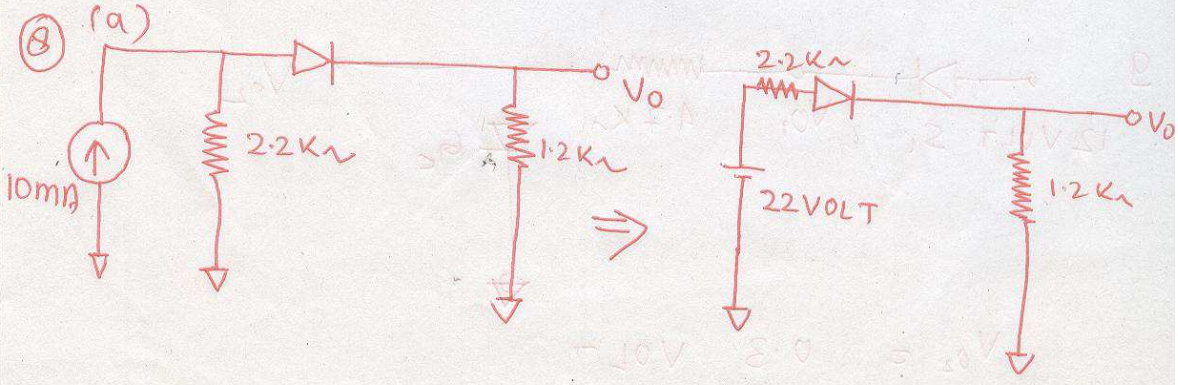
$$I = \frac{10 - 0.7 + 2}{1.2 + 4.7} = \frac{11.3}{5.9}$$

$$I = 1.915 \text{ m. ampere}$$

$$V_{4.7K\Omega} = [1.915 * 4.7] = 9 \text{ VOLT}$$

$$V_o = 9 - 2 = 7 \text{ VOLT}$$

(8) (a)



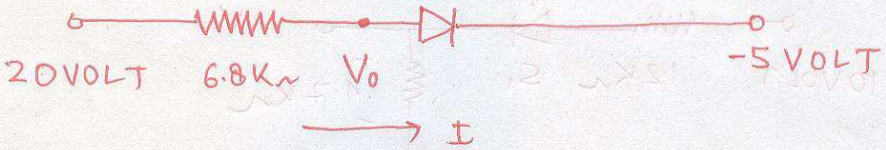
$$I_D = \left[\frac{22 - 0.7}{2.2 + 1.2}\right] = \frac{21.3}{3.4} \times 10^{-3}$$

$I_D = 6.26$ m.ampere

$V_0 = 6.62 \times 1.2$

$$\boxed{V_0 = 7.51 \text{ VOLT}}$$

(b)



$$I = \left[\frac{20 + 5 - 0.7}{6.8}\right] = \left[\frac{24.3}{6.8}\right]$$

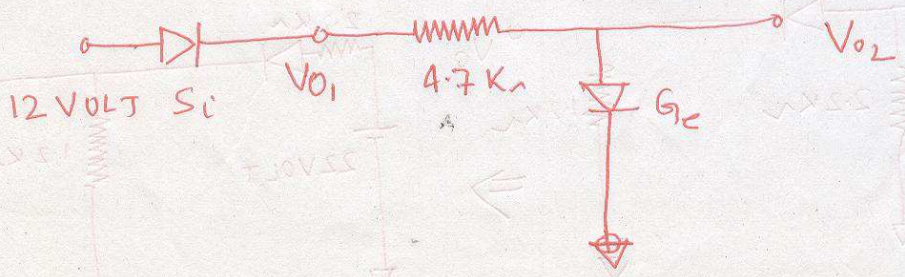
$I = 3.857$ m.ampere

$20 = (6.8 \times 3.857) + V_0$

$V_0 = 20 - 24.27$

$$\boxed{V_0 = -4.27 \text{ Volt}}$$

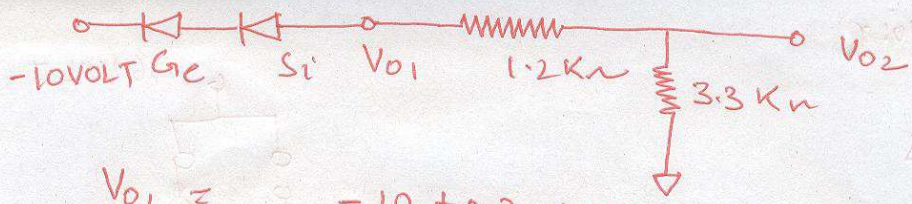
9



$V_{02} = 0.3$ VOLT

$V_{01} = 12 - 0.7 = 11.3$ VOLT

B3



$V_{O1} = -10 + 0.3 + 0.7$

$\boxed{V_{O1} = -9 \text{ VOLT}}$

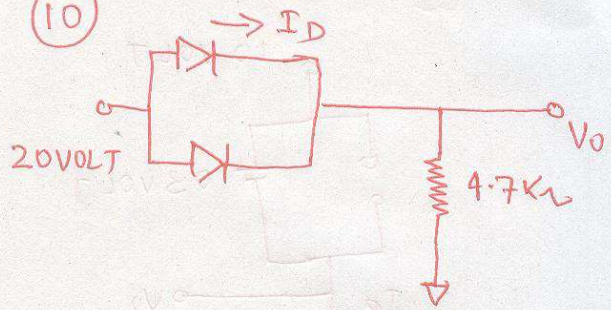
$I = \dfrac{-10+1}{3.3+1.2} = -\dfrac{9}{4.5}$

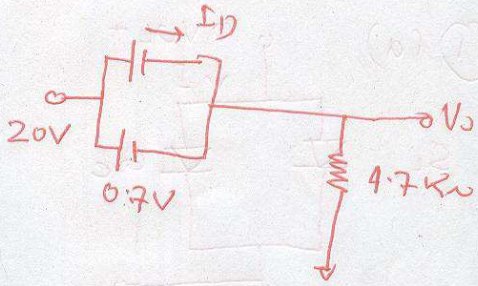
$\boxed{I = -2 \text{ m. ampere}}$

$V_{O2} = (-2) \times 3.3$

$\boxed{V_{O2} = -6.6 \text{ VOLT}}$

(10)





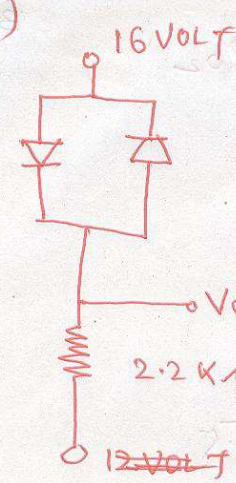
$V_O = 20 - 0.7 = 19.3 \text{ VOLT}$

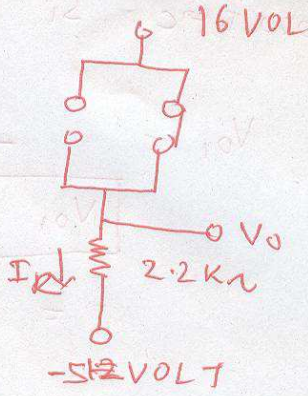
$I = \left[\dfrac{19.3}{4.7}\right] = 4.106 \text{ m. ampere}$

$V_O = 4.106 \times 4.7 = 19.3 \text{ VOLT}$

$I_D = \left(\dfrac{I}{2}\right) = 2.054 \text{ m. ampere}$

(b)



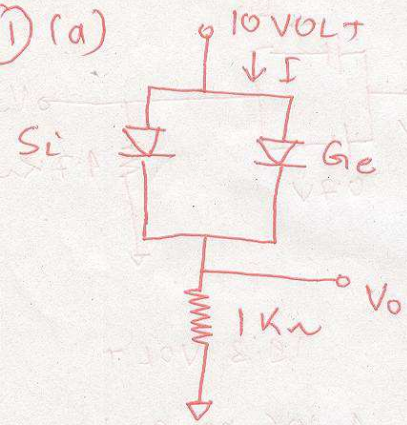


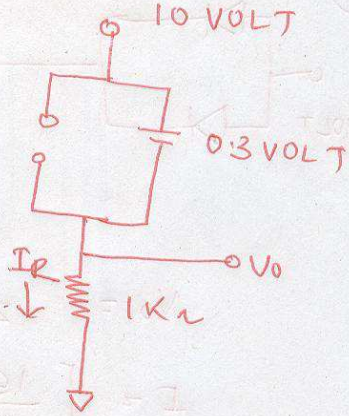
$V_O = 16 - 0.7 = 15.3$ VOLT

$I_R = \left[\frac{20 - 0.7 + 5}{2.2}\right] = 0.77$ m. ampere

$I_D = I_R = 0.77$ m. ampere

(11) (a)

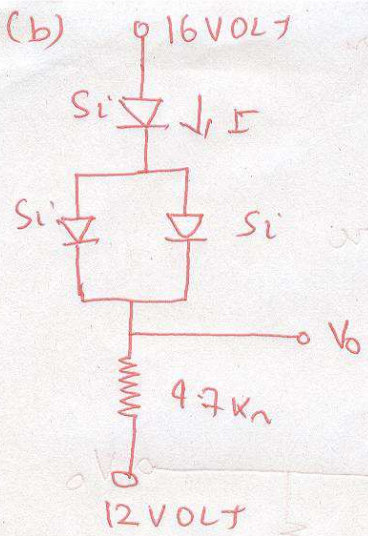


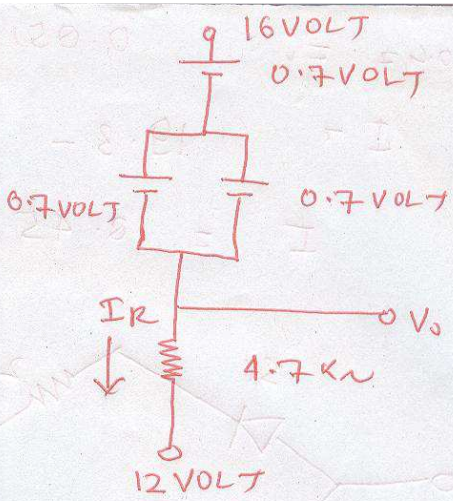


$V_O = 10 - 0.3 = 9.7$ VOLT

$I_R = \frac{V_O}{1\,K\Omega} = 9.7$ m. ampere

(b)



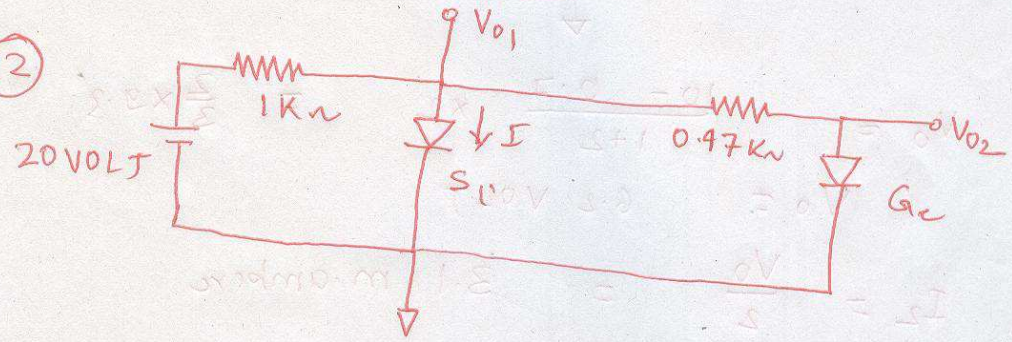


$V_0 = 16 - 0.7 - 0.7$

$V_0 = 14.6$ VOLT

$I_R = \left[\frac{14.6 - 12}{4.7}\right] = 0.553$ m. ampere

(12)



$V_{01} = 0.7$ VOLT

$V_{02} = 0.3$ VOLT

$I_{1K\Omega} = \left[\frac{20 - 0.7}{1}\right] = 19.3$ m. ampere

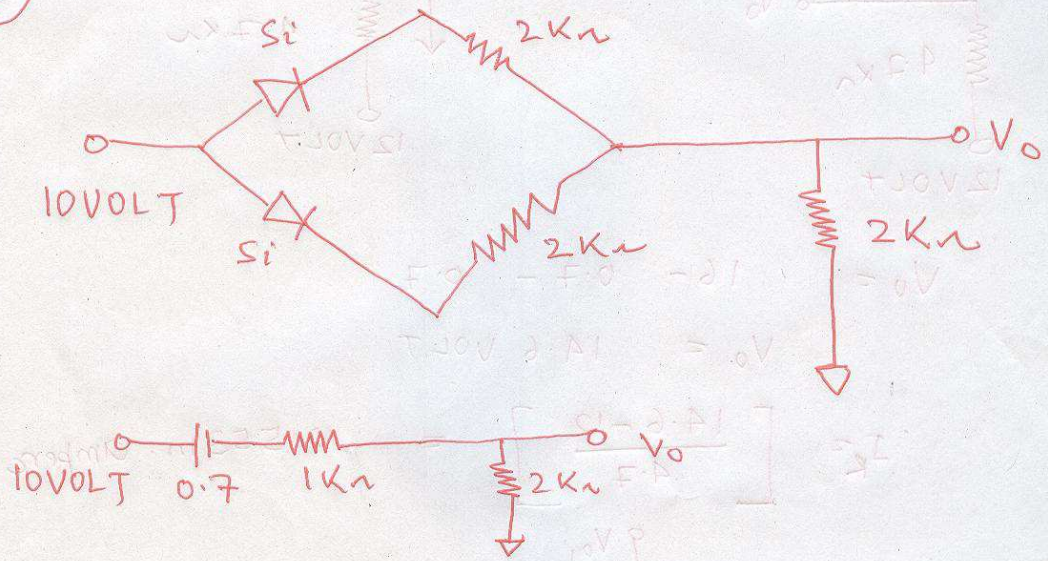
$I_{0.47K\Omega} = \left[\frac{0.7 - 0.3}{0.47}\right] =$

$I_{0.47} = 0.051$ m.ampere

$I = 19.3 - 0.051$

$I = 18.45$ m ampere

(13)



$V_o = \frac{10 - 0.7}{1+2} \times 2 = \frac{2}{3} \times 9.3$

$V_o = 6.2$ VOLT

$I_2 = \frac{V_o}{2} = 3.1$ m.ampere

$I_D = \frac{I_2}{2} = 1.55$ m.ampere