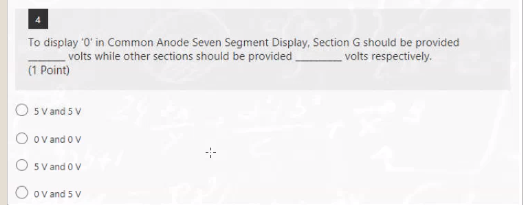
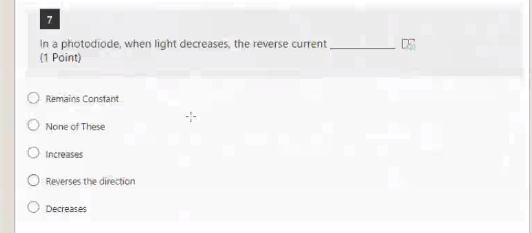
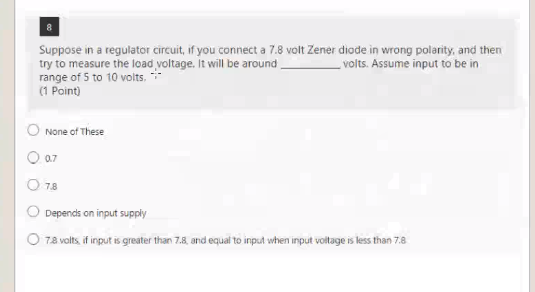
fb rb fb rb

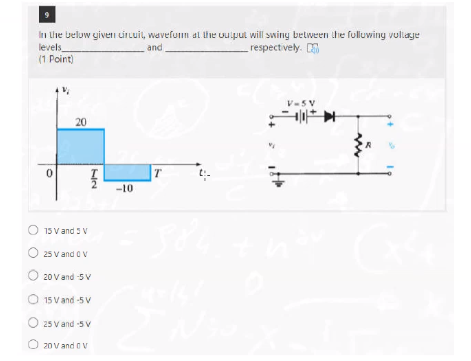
5 and 0

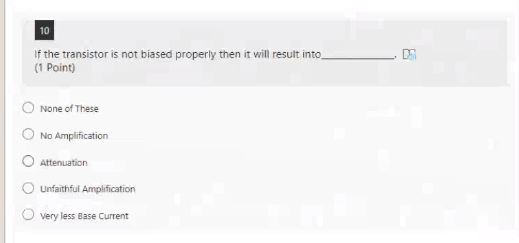
approx. equals emitter current

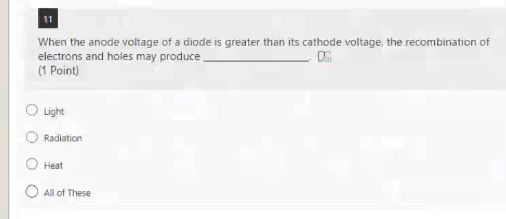
cc, cc

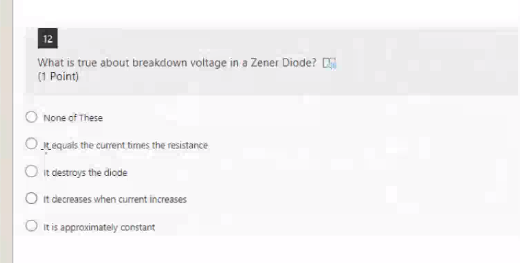
decreases to dark current level

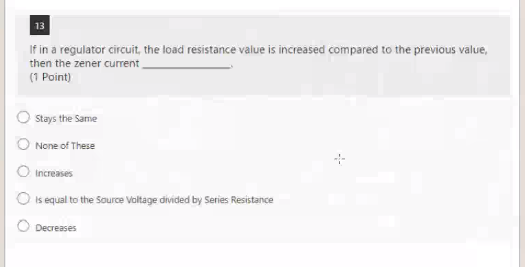
because of wrong polarity, close to zero, 0.7 (due to silicon diode)

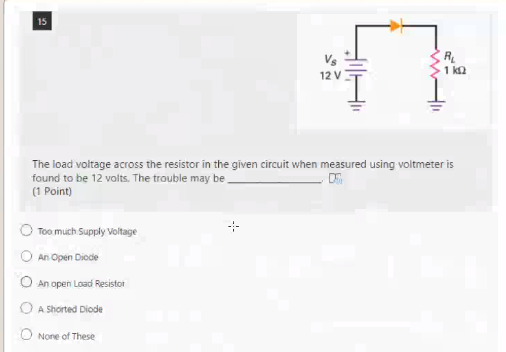


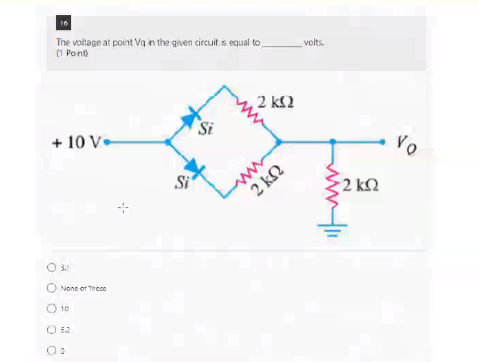


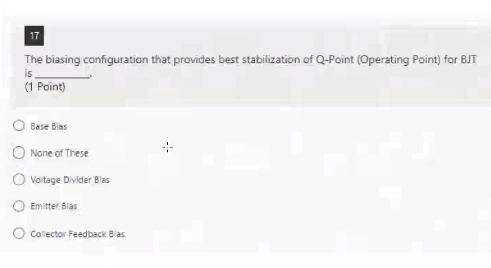
all

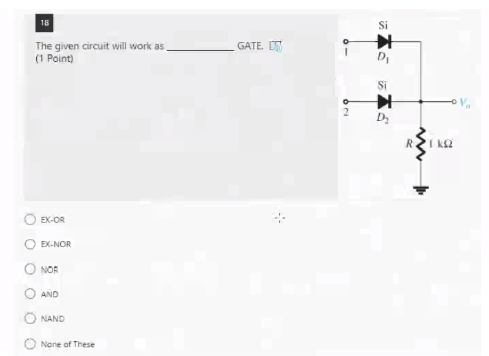
approx. constant

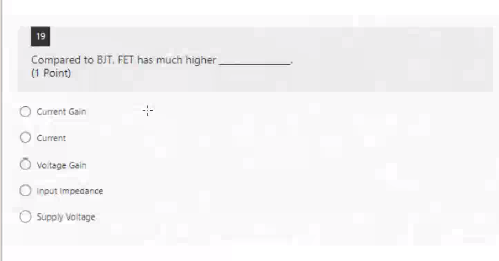
increases (as long as reverse voltage across it is greater than breakdown voltage)

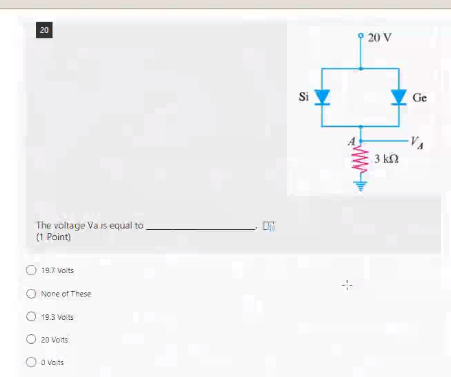
shorted diode



voltage divider bias

or

input impedence

as soon as voltage reaches 0.3 (gradual increase from 0 to 20 v), ge diode is activated and it maintains constant voltage of 0.3 v, so si diode is never activated, therefore Va = 20 – 0.3 = 19.7V