

Menghitung eV.

$$1. E = \frac{hc}{\lambda}$$

$$\cdot h = 6.626 \times 10^{-34} \text{ J}$$

$$\cdot c = 3 \times 10^8 \text{ m/s}$$

$$\cdot \lambda = 1000 \text{ nm} = 1 \times 10^{-6} \text{ m}$$

$$E = \frac{(6.626 \times 10^{-34})(3 \times 10^8)}{1 \times 10^{-6}}$$

$$= \frac{1.9878 \times 10^{-25}}{1 \times 10^{-6}}$$

$$= 1.9878 \times 10^{-19} \text{ J}$$

eV =

$$1 \text{ eV} = 1.6 \times 10^{-19} \text{ J}$$

$$E = \frac{1.9878 \times 10^{-19}}{1.6 \times 10^{-19}}$$

$$= 1.24 \text{ eV} //$$

2. Momentum foton

$$p = \frac{E}{c}$$

$$p = \frac{1,9878 \times 10^{-19}}{3 \times 10^8}$$

$$p = 6,63 \times 10^{-28} \text{ kgm/s} //$$

3. $E = \frac{1}{2}mv^2$

dengan:

$$m = 9,109 \times 10^{-31} \text{ kg} \quad (\text{massa elektron})$$

$$E = 1,9878 \times 10^{-19} \text{ J}$$

$$v = \sqrt{\frac{2E}{m}}$$

$$v = \sqrt{\frac{2 \times 1,9878 \times 10^{-19}}{9,109 \times 10^{-31}}}$$

$$= \sqrt{\frac{3,9756 \times 10^{-19}}{9,109 \times 10^{-31}}}$$

$$= \sqrt{4,363 \times 10^{11}}$$

$$= 6,61 \times 10^5 \text{ m/s}$$

$$= 660,642 \text{ m/s} //$$

Panjang gelombang cahaya

$$E = 3,3 \text{ eV}$$

$$h = 6,626 \times 10^{-34} \text{ J} \cdot \text{s}$$

$$c = 3,0 \times 10^8 \text{ m/s}$$

$$1 \text{ eV} = 1,6 \times 10^{-19} \text{ J}$$

Dijawab:

$$E = \frac{hc}{\lambda} = 3,3 \times (1,6 \times 10^{-19})$$

$$= 5,28 \times 10^{-19}$$

$$\lambda = \frac{hc}{E}$$

$$= \frac{6,626 \times 10^{-34} \cdot 3 \times 10^8}{5,28 \times 10^{-19}}$$

$$= \frac{1,9878 \times 10^{-25}}{5,28 \times 10^{-19}}$$

$$\lambda = 3,76 \times 10^{-7} \text{ m} = 376 \text{ Nm}$$