

Dane:

$$W = 4,33 \text{ eV} = 4,33 * 1,6 * 10^{-19} \text{ J} = 6,926 * 10^{-19} \text{ J}$$

$$v = 1,5 * 10^{15} \text{ Hz}$$

$$c = 3 * 10^8 \frac{\text{m}}{\text{s}}$$

$$h = 6,63 * 10^{-34} \text{ J} * \text{s}$$

$$m_e = 9,11 * 10^{-31} \text{ kg}$$

$$p_f = ?$$

$$p_e = ?$$

Ad. A

$$E_f = W + E_k$$

$$E_f = p_f * c$$

$$p_f * c = W + E_k$$

$$p_{f \text{ min}} * c = W + 0$$

$$p_{f \text{ min}} = \frac{W}{c}$$

$$p_{f \text{ min}} = \frac{6,928 * 10^{-19} \text{ J}}{3 * 10^8 \frac{\text{m}}{\text{s}}} = 2,31 * 10^{-27} \text{ kg} * \frac{\text{m}}{\text{s}}$$

Ad. B

$$E_f = p_f * c$$

$$h * v = p_f * c$$

$$p_f = \frac{h v}{c}$$

$$p_f = \frac{6,63 * 10^{-34} \text{ J} * \text{s} * 1,5 * 10^{15} \text{ Hz}}{3 * 10^8 \frac{\text{m}}{\text{s}}}$$

$$p_f = 3,315 * 10^{-27} \text{ kg} * \frac{\text{m}}{\text{s}}$$

$$p_f * c = p_{f \text{ min}} * c + E_k$$

$$E_k = \frac{m_e^2 v^2}{2m_e}$$

$$p = m * v$$

$$E_k = \frac{p_e^2}{2m_e}$$

$$p_f * c = p_{fmin} * c + \frac{p_e^2}{2m_e}$$

$$p_e = \sqrt{(p_f - p_{fmin}) * 2m_e c} = 7,4 * 10^{-25} \text{ kg} * \frac{\text{m}}{\text{s}}$$