

## Question:

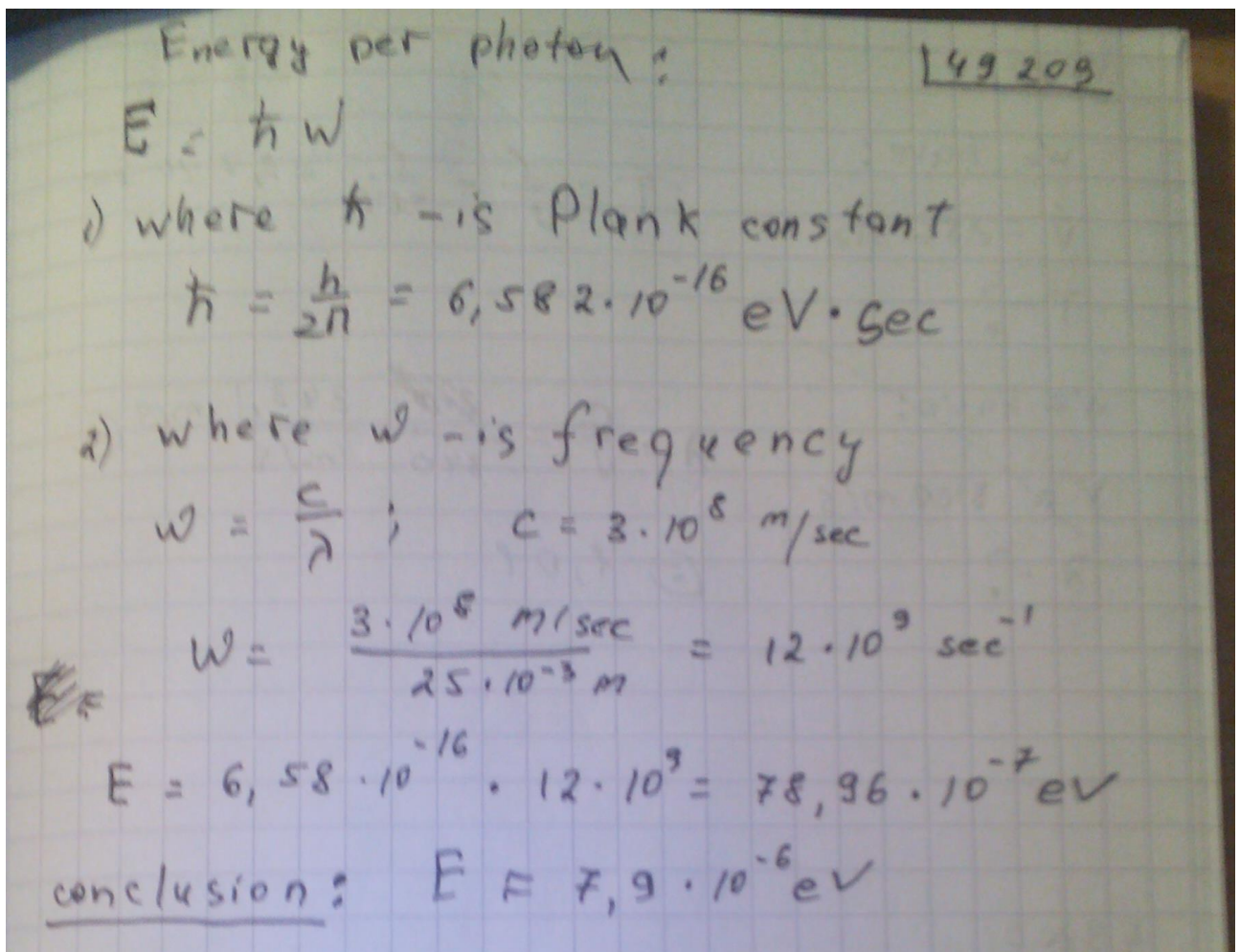
A typical wavelength of infrared radiation emitted by your body is 25mm. What is the energy per photon at that wavelength?

What we have:

$$\lambda = 25\text{mm}$$

must find:

E - ?



Energy per photon: 149209

$$E = h \omega$$

1) where  $h$  - is Planck constant

$$h = \frac{h}{2\pi} = 6,582 \cdot 10^{-16} \text{ eV} \cdot \text{sec}$$

2) where  $\omega$  - is frequency

$$\omega = \frac{c}{\lambda}; \quad c = 3 \cdot 10^8 \text{ m/sec}$$
$$\omega = \frac{3 \cdot 10^8 \text{ m/sec}}{25 \cdot 10^{-3} \text{ m}} = 12 \cdot 10^9 \text{ sec}^{-1}$$
$$E = 6,58 \cdot 10^{-16} \cdot 12 \cdot 10^9 = 78,96 \cdot 10^{-7} \text{ eV}$$

conclusion:  $E = 7,9 \cdot 10^{-6} \text{ eV}$