① I^{131}

$A = 1{,}1 \cdot 10^8\ Bq = 1{,}1 \cdot 10^8\ \frac{1}{s}$ 20%

$n = 2{,}7$

$E_\gamma = 0{,}184\ MeV$

61. $\frac{D}{t} = \frac{A \cdot E}{m} \cdot 0{,}3 = \frac{1{,}1 \cdot 10^8\ \frac{1}{s} \cdot 0{,}184\ MeV \cdot 1{,}602 \cdot 10^{-13}}{20 \cdot 10^{-3}}$

$\frac{D}{t} = 48{,}64 \cdot 10^{-6}\ Gy/s$

62.

① $R = 0{,}53 \cdot E - 0{,}106 = 10{,}454$

$R_1 = 1{,}5 \cdot \frac{1000 \cdot 1000}{100 \cdot 100 \cdot 100} = 2{,}4$

$4{,}4 = 0{,}53 \cdot E - 0{,}106$

$E = 4{,}7283\ MeV$

① $E_\gamma = 1{,}46\ \text{MeV} = E_0$

$$E_\gamma' = \frac{E_\gamma}{1 + \frac{E_\gamma}{mc^2}(1-\cos\theta)} = \frac{1{,}46}{1 + \frac{1{,}46}{0{,}511}(1-\cos 30°)}$$

$$E_\gamma' = 1{,}055\ \text{MeV}$$

$$E_\gamma'' = \frac{E_\gamma'}{1 + \frac{E_\gamma'}{mc^2}(1-\cos 150°)} = 0{,}2174\ \text{MeV}$$

$$E_\gamma = h \cdot \frac{c}{\lambda}$$

$$\lambda = \frac{m \cdot c}{E_\gamma''} = \frac{4{,}136 \cdot 10^{-21}\ \text{MeV s} \cdot 3 \cdot 10^8\ \text{m/s}}{0{,}2174\ \text{MeV}}$$

$$\lambda = 5{,}70 \cdot 10^{-12}\ \text{m}$$

$h = 6{,}626 \cdot 10^{-34}\ \text{J s} = \frac{1\ \text{MeV}}{1{,}602176 \cdot 10^{-13}\ \text{J}} = 4{,}136 \cdot 10^{-21}$