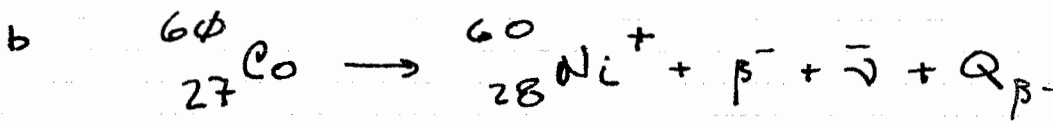


1) a  $\frac{Z_A}{A} = \left(\frac{1}{2}\right) \frac{81}{8\phi + \phi \cdot 6 A^{2/3}}$  from Eq 2.9 in text

$$\frac{Z_A}{A} = \frac{81}{26\phi + 1.2(6\phi)^{2/3}} = \frac{81}{16\phi + 15.3} = \phi \cdot 462$$

$$Z_A = \phi \cdot 462 \cdot 6\phi = 27.7 \quad (\text{higher than } Z=27 \text{ Co})$$

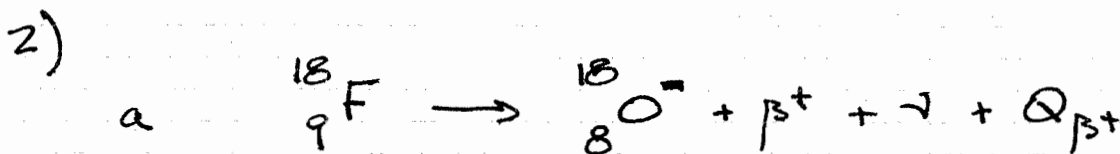


c  $Q_{\beta^-} = \Delta({}^{60}\text{Co}) - \Delta({}^{60}\text{Ni})$

$$Q = (-61.649 \text{ MeV}) - (-64.472 \text{ MeV})$$

$$Q = +2.823 \text{ MeV}$$

mass defects  
use neutral atoms  
to account for  
electrons  
from "Nucleus"  
program



$$Q = \Delta({}^{18}\text{F}) - \Delta({}^{18}\text{O}) - 2m_e c^2$$

$$= +\phi.8737 - (-\phi.7815) - 1.022 \text{ MeV}$$

$$= +\phi.6332 \text{ MeV}$$

from "Nucleus"  
program

b  $A = A_0 e^{-\lambda t} = 35\phi \text{ MBq} e^{-\left(\frac{\ln 2 \times 3 \times 60 \text{ min}}{1\phi9.771 \text{ min}}\right) t}$

$$= 35\phi \text{ MBq} e^{-1.1366 t}$$

$$= 35\phi \times \phi.32\phi9 \text{ MBq}$$

$$= 112. \text{ MBq} \quad (3. \phi36 \text{ } \mu\text{Ci})$$