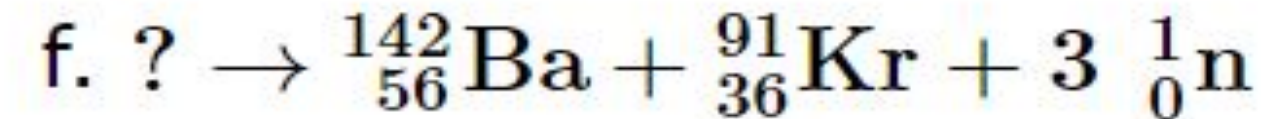
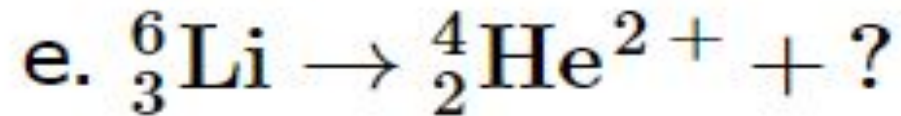
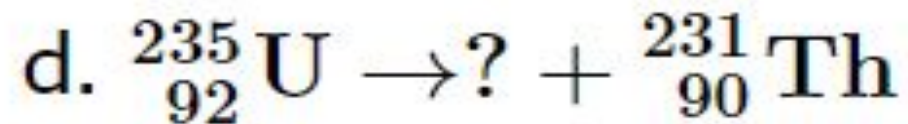
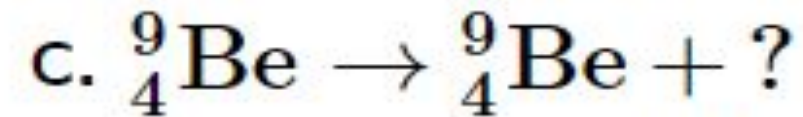
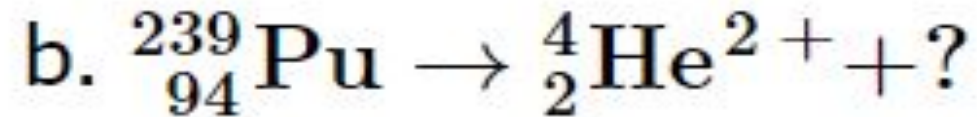
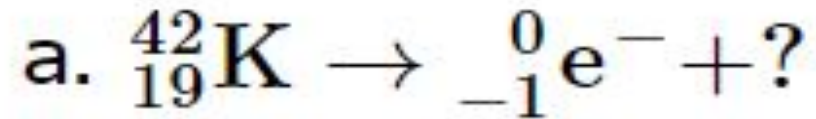


Mark – scheme for RADIOACTIVITY quiz:

1. Delta.
2. True
3. Gamma
4. Alpha particles
5. **Beta decay** (*Radioactive decay that emits energetic electrons is called beta decay. Beta decay comes in two varieties. β^- decay involves normal, negatively-charged electrons, while β^+ decay involves positively-charged electrons or positrons. The energetic electrons or positrons are called beta particles in this context.*)
6. Alpha decay

Q2: Complete the following nuclear equations (the question marks)



Pre-lesson activity:

- What is the atomic mass?
- Why we do not use the absolute atomic mass?
- How the relative atomic mass was calculated?
- What is the value of *amu*?
- Why the atomic masses in the periodic table are not necessarily whole numbers?

Theme of the lesson

Atomic mass

Learning objectives

- ✓ Calculate relative atomic, molecular and formula masses.
- ✓ Explain why the atomic masses in the periodic table are not necessarily whole numbers.
- ✓ Calculate relative isotopic ratios from molar mass.

Success criteria

Student achieves if

- ✓ He/she will be able to calculate relative atomic, molecular and formula masses
- ✓ He/she can explain why the atomic masses in the periodic table are not necessarily whole numbers
- ✓ He/she will be able to calculate relative isotopic ratios from molar mass

The relative atomic mass is calculated using the equation:

$$A_r = \frac{(\% \text{ of Isotope 1} \times \text{mass of Isotope 1}) + (\% \text{ of Isotope } n \times \text{mass of Isotope } n)}{100}$$

So in the case of chlorine:

$$A_r = \frac{(25\% \times 37) + (75\% \times 35)}{100} = 35.5$$

Task 1. Calculate the relative atomic mass of oxygen if its absolute atomic mass is equal to 26.67×10^{-27} kg

Task 2. What is the absolute atomic mass of sulfur atom?

Task 3. Calculate the average relative atomic mass for next isotopes of given elements:

- 69.2% ${}^{63}_{29}\text{Cu}$ and 30.8% ${}^{65}_{29}\text{Cu}$
- 50% of ${}^{79}_{35}\text{Br}$ and 50% of ${}^{81}_{35}\text{Br}$

Task 4. It is possible to do the reverse of a relative atomic mass calculation if you know the A_r which isotopes are present. (It involves a little bit of arithmetical algebra.) The A_r of boron is 10.81 and consists of only two isotopes, boron-10 and boron-11. Calculate the % composition of isotopes MS