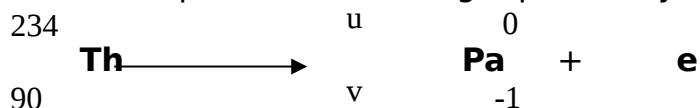


RADIOACTIVITY

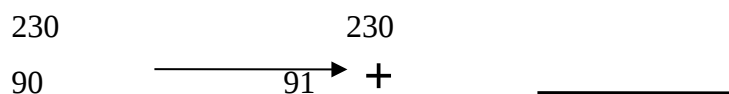
1. Complete the following equation by determining the values of **U** and **V**.



U..... V.....

2. (a) Distinguish between nuclear fusion and fission

(b) Complete the nuclear equation below:-

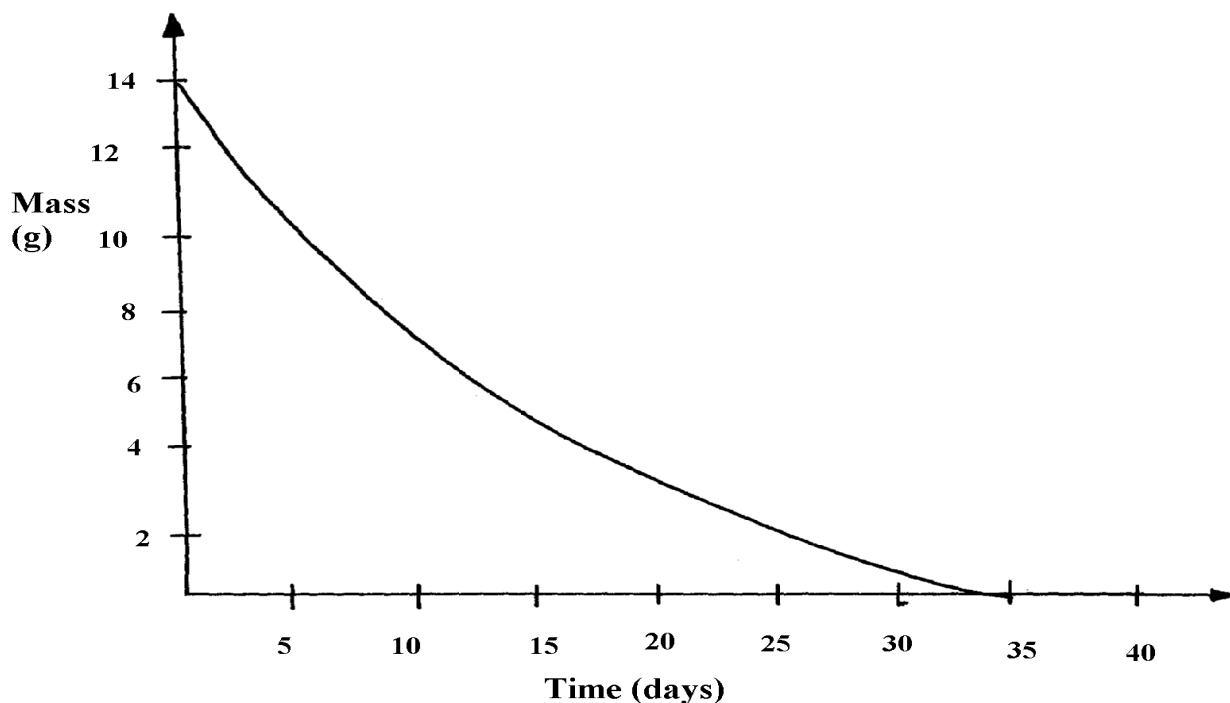


3. Uranium -238 disintegrates by emitting an alpha particle to form substance **Y**.

Nuclide **Y** emits a beta particle to form substance **Z**. Write down nuclear equations to show how substance **Y** and **Z** are formed (U=At No. 92)

4. (a) What is a nuclide?

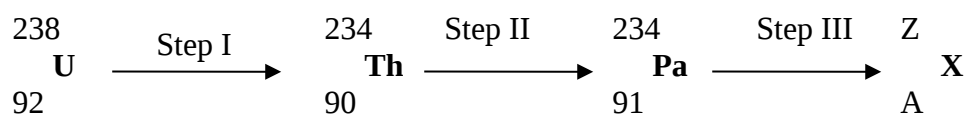
(b) The graph below shows the radioactive decay of a certain nuclide. Determine the half-life of the nuclide



(c) What effect do excess exposures of radiation have on metals?

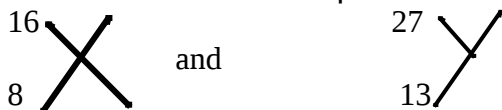
5. (a) State **one** way in which nuclear reactions differ from ordinary chemical reactions

(b) The following is a part of Uranium decay series



- a) Which particles are emitted in **step I** and **II**
- b) If a beta particle is emitted in **step III**, find **Z** and **A**
- c) If the activity of Thorium -234 is reduced to 25% in 48hours, find its half life

6. Some **two** elements are represented as:



(a) How many protons does **X** have?

(b) How many neutrons does **Y** have?

(c) Draw the structure of the compound formed between **X** and **Y**

7. **Y** grams of a radioactive isotope take 120days to decay to 3.5grams. The half-life period

of the isotope is 20days

(c) Find the initial mass of the isotope

(b) Give **one** application of radioactivity in agriculture

8. Study the nuclear reactions given and answer the questions that follow:



(a) Write an equation for the nuclear reaction in step II
(1mk)

(b) Give **one** use of $\mathbf{Y}$
(1mk)

9. Give **two** uses of radioactive isotopes in medicine.

10. Study the information in the following table and answer the questions that follow. The letters do not represent the actual chemical symbols of the elements.

ELEMENT	U	V	W	X	Y	Z
NUMBER OF PROTONS	18	20	6	16	19	17
NUMBER OF NEUTRONS	22	20	8	16	20	20

Which of the above elements are:

a) Likely to be radioactive?

(ii) Able to form a compound with the highest ionic character?