**GATITU MIXED SECONDARY SCHOOL**

**CHEMISTRY F4**

**OPENER EXAM (Radioactivity)**

**TERM II 2015**

INSTRUCTIONS

Answer all questions.

1. Complete the following equation by determining the values of **U** and **V**. (2 mks)

u

v

234

90

0

-1

**Th**   **Pa** +  **e**

U……… V……………..

2. (a) Distinguish between nuclear fusion and fission (2 mks)

(b) Compete the nuclear equation below:- (1 mk)

230 230

90 91 **+**

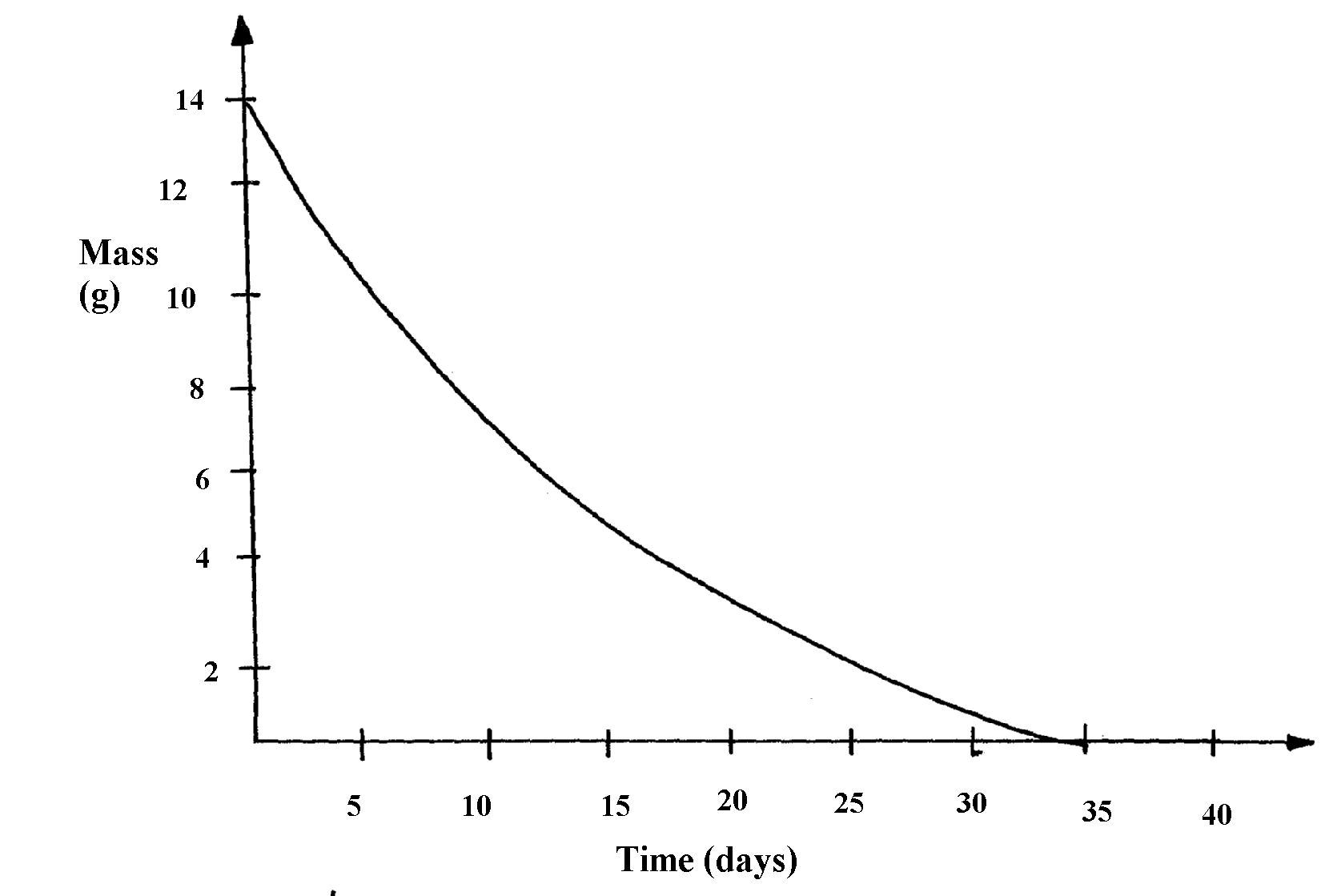
3. Uranium -238 disintegrates by emitting an alpha particle to form substance **Y**.

Nuclide **Y** emits a beta particle to form substance **Z**. Write down nuclear equations to show how

substance **Y** and **Z** are formed (U=Atomic No. 92) (2 mks)

4. (a) What is a nuclide? (1 mk)

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

half-life of the nuclide (2 mks)

5. (a) State **one** way in which nuclear reactions differ from ordinary chemical reactions (1 mk)

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

238

**U**

92

234

**Th**

90

234

**Pa**

91

Z

**X**

A

Step I

Step II

Step III

(i) Which particles are emitted in **step I** and **II** (1 mk)

(ii) If a beta particle is emitted in **step III,** find **Z a**nd **A** (1 mk)

(iii) If the activity of Thorium -234 is reduced to 25% in 48hours, find its half life (2 mk)

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

16 27

and

8 13

(a) How many protons does **X** have? (1 mk)

(b) How many neutrons does **Y** have? (1 mk)

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

of the isotope is 20days

(a) Find the initial mass of the isotope (2 mks)

(b) Give **one** application of radioactivity in medicine (1 mk)