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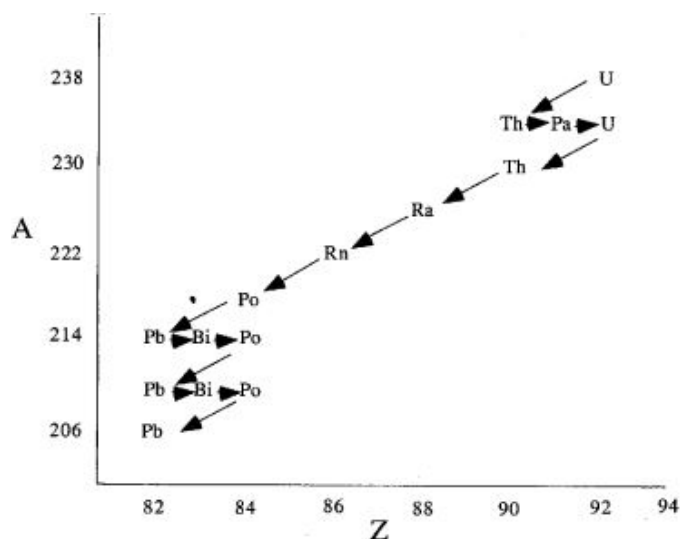
Compiled Exam

Comments & Suggestions?
join.examclopedia.club/
panda@pandamakes.com.au

1. Discuss the implication of slingshot effect on further space travel to the edge of solar system. 2

2. The following series shows how the element uranium decays to the stable isotope Pb-206.

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What do the symbols Z and A on the y and x axes represent?

Write a nuclear equation for the first step of the series (alpha decay of uranium-238)

3. In order to determine the concentration of a solution of acetic (ethanoic) acid, a student prepared a solution of NaOH, which then had to be standardised. 5

The acetic acid concentration was calculated to be 0.1155 M.

(a) Identify one property of NaOH which makes it unsuitable for use as a primary standard.

(b) Calculate the pH of the acetic acid solution, assuming that 1% of the acetic acid molecules are ionised in solution.

(c) The student chose phenolphthalein as the indicator for this titration.

Explain, using equations to illustrate your answer, why this was an appropriate choice.

4. Distinguish between weight and mass.

1

5. Discuss the use of eddy currents in the context of electromagnetic braking and induction cook tops. 8

6. Assess the need to find alternative sources to petrochemical industry. 3

7. Describe the inertial frame of reference and its importance in Einstein's special theory of relativity. 3

8. Outline J.J. Thompson's experiment which helped clarify the true nature of cathode ray. 5

9. A student created the following models to demonstrate a chemical process.

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- (a) Identify the chemical process being modelled.

(b) Discuss the use of models to demonstrate chemical processes.

10. The composition of a marine artefact is a significant factor that affects the procedures used in its preservation and restoration.

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Justify differences in the procedures used to treat and restore marine artefacts of different compositions. In your answer, refer to at least TWO artefacts of different compositions, one of them being a metallic artefact. Include relevant equations in your answer.
