

# Chemistry

## Section I – Part B (continued)

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Marks

### Question 19 (5 marks)

- (a) Describe the conditions under which a nucleus is unstable.

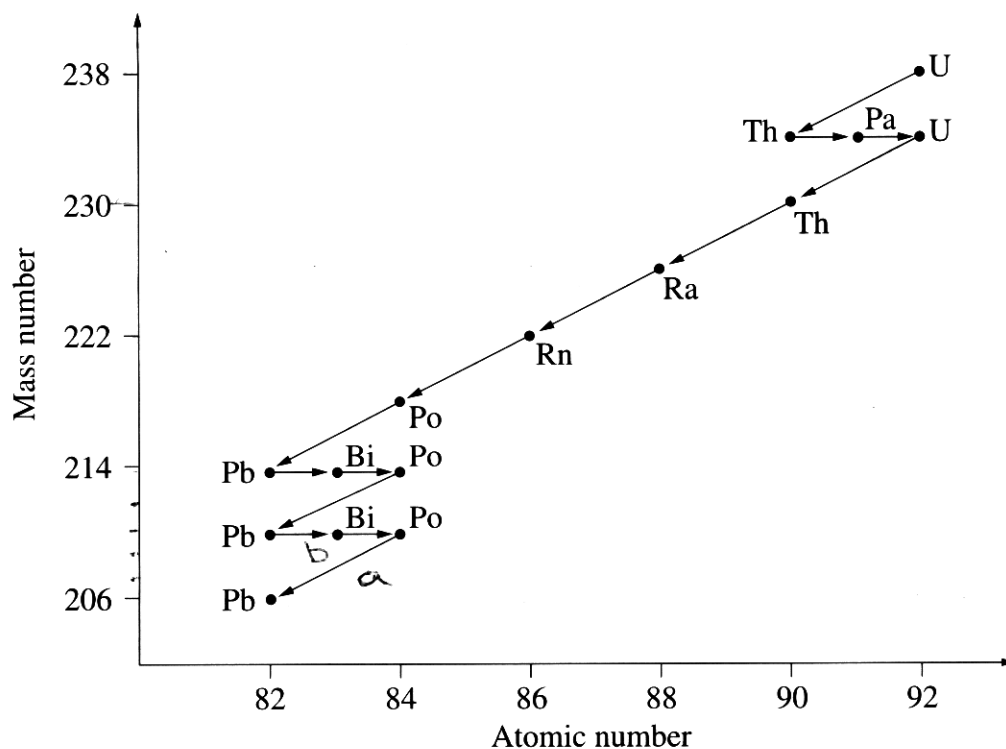
2

Nucleus can become unstable through natural decay of isotopes. Unstable nucleus can also be manufacture in nuclear reactors where heavy atoms nucleus are bombarded with sub atomic particles, causing the nucleus to become unstable i.e too many neutrons or too many protons

Question 19 continues on page 14

Question 19 (continued)

- (b) The following is a flow diagram showing the sequence of products released during the decay of uranium. 3



Use examples from the flow diagram to describe processes by which an unstable isotope undergoes radioactive decay.

- ~~${}_{84}^{210}\text{Po} \rightarrow {}_{82}^{206}\text{Pb} + {}_2^4\text{He}$  - helium nuclei lost~~
- a)  ${}_{84}^{210}\text{Po} \rightarrow {}_{82}^{206}\text{Pb} + {}_2^4\text{He}$  - helium nuclei lost - alpha radiation
- b)  ${}_{82}^{214}\text{Pb} \rightarrow {}_{83}^{214}\text{Bi}$  - Beta radiation

End of Question 19

