2002 HIGHER SCHOOL CERTIFICATE EXAMINATION

Chemistry

Section I – Part B (continued)

Marks

Question 19 (5 marks)

(a) Describe the conditions under which a nucleus is unstable. **2**

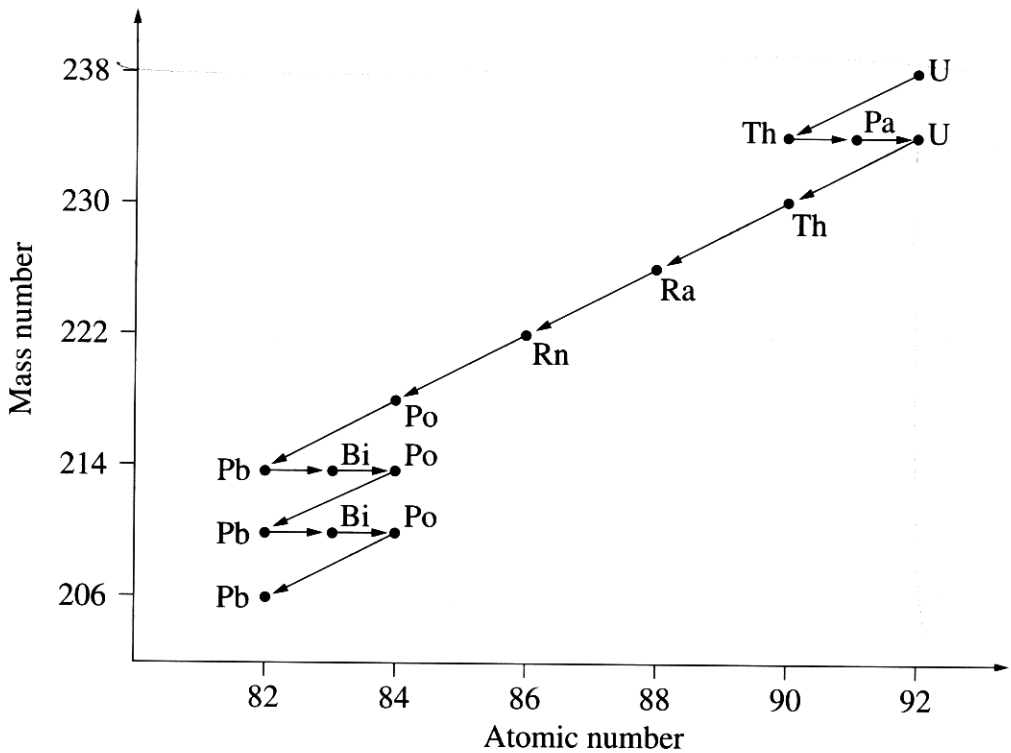
the nucleus is said to be unstable when the number of neutrons is greater then the number of protons. Also elements with an atomic mass greater then 98 are also said to be unstable.

Question 19 continues on page 14

Marks

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.

The isotope either emits a α-partical to become stable or is bombarded with electrons β-particals to also ~~take~~ to become stable for example

~~$Pb^{226} \rightarrow {}^{4}_{2}He + Po$~~

U^{238}_{92} emitts ~~a~~ α-particals to become stable to Th^{232}_{90} ~~but again again emits~~

eg. $U^{238}_{92} \rightarrow {}^{4}_{2}He + Th^{232}_{90}$

End of Question 19