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**

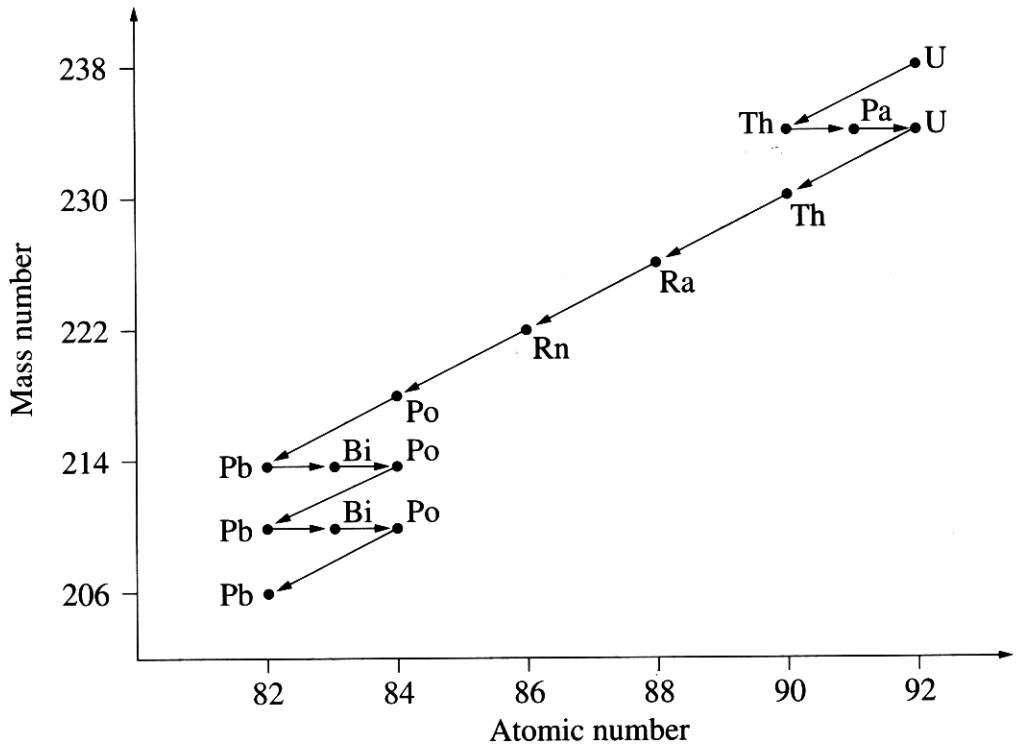
A nucleus is unstable when it consists of too many nuetrons. This makes them radio isotopes which emitts radiation or undergo radioactive decay. Another reason in which a nucleus would be unstable would be because it's nucleus or atomic mass might be too large.

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 unstable Uranium isotope is undergoing α decay as it is releasing Helium atoms

$U_{92}^{238} \rightarrow Th_{90}^{232} + He_{2}^{4}$

End of Question 19