

- Explain why a sustained fission chain reaction can only occur when a critical mass is prepared.

Marks
2

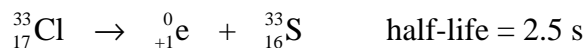
- The half life of ^3H is 12 years. Calculate how long it takes (rounded to the nearest year) for the activity of a sample of tritium to have dropped to 0.1% of its original value.

2

Answer:

- Consider the following list of unstable isotopes and their decay mechanisms.

3



From this list, select the isotope that best satisfies the following requirements. Provide a reason for your choice in each case.

Requirement	Isotope	Reason for choice
Isotope used in medical imaging		
Decay represents the transformation of a neutron into a proton		
The isotope with the highest molar activity		