**Physical Science NCFE Guided Review 2.3**

(Nuclear Reactions)

**PSc.2.3.1 Compare nuclear reactions including: alpha decay, beta decay, and gamma decay; nuclear fusion and nuclear fission.**

Describe the characteristics

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Symbol | Change in Mass | Change in Charge | Shielding /  Penetrating ability |
| Alpha |  |  |  |  |
| Beta |  |  |  |  |
| Gamma |  |  |  |  |

Predict the products of the nuclear reactions:

a) 226Ra 🡪 222Rn +

88 86

232 232

b) Th 🡪 Pa +

90 91

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Basic Definition | Required Conditions | Energy Released | Products |
| Fission |  |  |  |  |
| Fusion |  |  |  |  |

**PSc.2.3.2 Exemplify the radioactive decay of unstable nuclei using the concept of half-life.**

Basic Definition:

Example: An isotope of carbon-18 has a half-life of 5 days. An initial sample with a mass of 200 kg decays for 20 days, how much of the original sample is left?