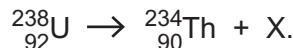


- 7 (a) Describe the structure of an **atom** of uranium-238, $^{238}_{92}\text{U}$.

.....
.....
..... [2]

- (b) The decay of uranium-238 is shown by the equation



For nucleus X, calculate the ratio, in C kg^{-1} , of

$$\frac{\text{charge}}{\text{mass}}.$$

$$\text{ratio} = \dots \text{C kg}^{-1} [3]$$

- (c) Two particles P and Q each consist of three quarks. These quarks are up (u) or down (d) quarks.

Particle P has no overall charge.

Particle Q has an overall charge of $+2e$, where e is the elementary charge.

State the quark composition of:

- (i) particle P

..... [1]

- (ii) particle Q.

..... [1]