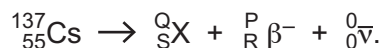


- 7 (a) A nucleus of caesium-137 ($^{137}_{55}\text{Cs}$) decays by emitting a β^- particle to produce a nucleus of an element X and an antineutrino. The decay is represented by



- (i) State the number represented by each of the following letters.

P

Q

R

S

[2]

- (ii) State the name of the class (group) of particles that includes the β^- particle and the antineutrino.

..... [1]

- (b) A particle Y has a quark composition of ddd where d represents a down quark.

A particle Z has a quark composition of $\bar{u}d$ where \bar{u} represents an up antiquark.

- (i) Show that the charges of particles Y and Z are equal.

[2]

- (ii) State and explain which particle is a meson and which particle is a baryon.

meson:

.....

baryon:

.....

[2]