39 Strontium- 90 ($^{90}_{38}Sr$) is radioactive and emits β-particles.

Which equation could represent this nuclear decay?

A $^{90}_{38}Sr \rightarrow {}^{90}_{39}Sr + {}^{0}_{-1}\beta$

B $^{90}_{38}Sr \rightarrow {}^{90}_{39}Y + {}^{0}_{-1}\beta$

C $^{90}_{38}Sr \rightarrow {}^{90}_{37}Rb + {}^{0}_{1}\beta$

D $^{90}_{38}Sr \rightarrow {}^{90}_{37}Sr + {}^{0}_{1}\beta$

40 Protons and neutrons are thought to consist of smaller particles called quarks.

The 'up' quark has a charge of $\frac{2}{3}e$: a 'down' quark has a charge of $-\frac{1}{3}e$, where e is the elementary charge ($+1.6 \times 10^{-19}$ C).

How many up quarks and down quarks must a proton contain?

	up quarks	down quarks
A	0	3
B	1	1
C	1	2
D	2	1