Question 23 (3 marks)

(a) Write a balanced chemical equation for the complete combustion of 1-butanol. **1**

$CH_3OHCH_2CH_2CH_3 + O_2 \rightarrow C_4H_{10}O_3$

(b) A student measured the heat of combustion of three different fuels. The results are shown in the table. **2**

Fuel	*Heat of combustion* (kJ g^{-1})
A	–48
B	–38
C	–28

The published value for the heat of combustion of 1-butanol is 2676 kJ mol-1.

Which fuel from the table is likely to be 1-butanol? Justify your answer.

$C_4H_{10}O$

$48+10+16$

$=64$ B

$m = \frac{2676}{84}$