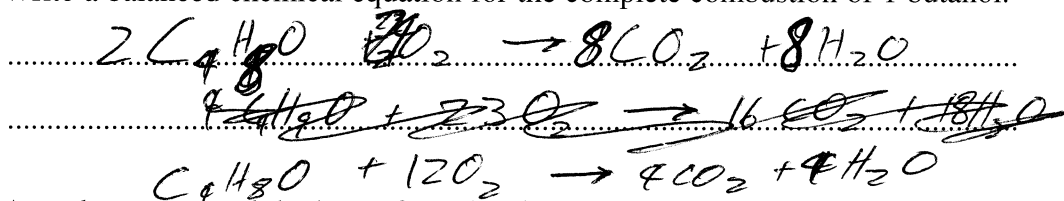


**Question 23** (3 marks)

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



- (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 <sup>-1</sup> )
A	-48
B	-38
C	-28

$$\frac{\text{kJ}}{\text{mol}} \cdot \frac{\text{mol}}{9} = \frac{\text{kJ}}{9}$$

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

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

..... Fuel B is most likely to be the .....

..... heat of combustion of butanol because .....

..... when dividing 2676 by butanol's molar .....

..... mass a value of approximately 38 .....

..... is achieved. ....

.....