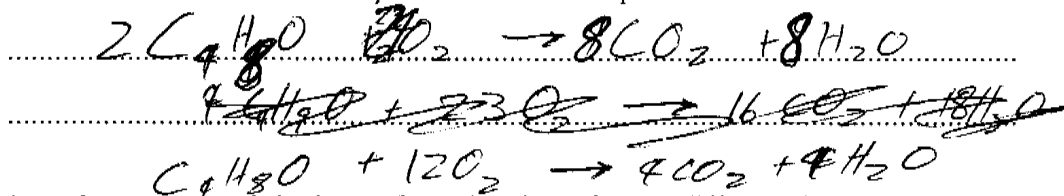


Question 23 (3 marks)

- (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 ⁻¹)
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⁻¹.

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.