

Name _____ Date _____

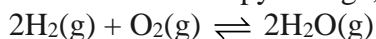
End of Chapter 13 test

This test and its sample answers have been written by the authors. IB may award marks differently.

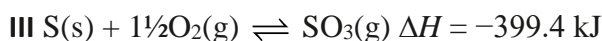
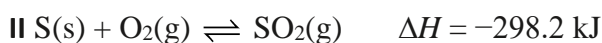
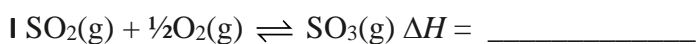
- 1 The bond enthalpies in kJ mol^{-1} for several bonds are given in the table:

	kJ mol^{-1}			kJ mol^{-1}
H—H	436		O=O	496
O—O	196		H—O	463

What is the enthalpy change, ΔH , in kJ for the following reaction:



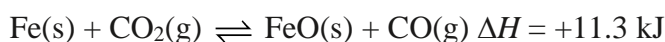
- A 442
 B 92
 C -484
 D -834
- 2 Sulfur(IV) oxide, $\text{SO}_2(\text{g})$, may be catalytically oxidised to sulfur(VI) oxide, $\text{SO}_3(\text{g})$, as shown in reaction I:



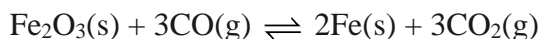
On the basis of the reactions given, the enthalpy change for reaction I is

- A -101.2 kJ
 B +101.2 kJ
 C -697.6 kJ
 D -348.6 kJ.

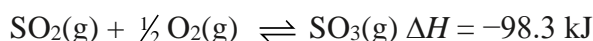
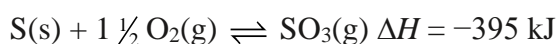
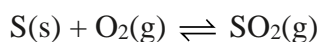
- 3 Given the following thermochemical equations:



determine the value of ΔH for the following reaction:



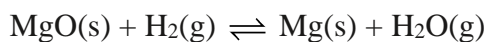
- A** +8.4 kJ
B -8.4 kJ
C -14.2 kJ
D -25.5 kJ
- 4 From the following information, calculate the enthalpy change, ΔH , for the following reaction:



- A** +494 kJ
B +297 kJ
C -297 kJ
D -494 kJ
- 5 Consider the following equations:

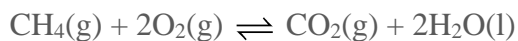


What is the ΔH value (in kJ) for the following reaction?

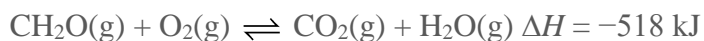


- A** -844
B -360
C +360
D +844

- 6 Methane, CH_4 , burns by combining with oxygen, according to the following equation:



Use the following information to calculate ΔH in kJ mol^{-1} for the combustion of methane to form carbon dioxide and water:



- 7 The standard enthalpies of formation, ΔH_f , for $\text{CH}_4(\text{g})$, $\text{O}_2(\text{g})$ and $\text{H}_2\text{O}(\text{g})$ are -74.9 , 0.0 and $-241.8 \text{ kJ mol}^{-1}$, respectively. Calculate ΔH_f for $\text{CH}_2\text{O}(\text{g})$.

- 8 The lattice enthalpy of an ionic compound can be calculated using a Born–Haber cycle. Using lithium fluoride as the example, construct a Born–Haber cycle, labelling the cycle with the formulas and state symbols of the species present at each stage.

END OF TEST