

Name \_\_\_\_\_

Date \_\_\_\_\_

## End of Chapter 12 test

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

- How many joules of heat are released from 15.0 g of a metal, with a specific heat capacity of  $0.217 \text{ J g}^{-1} \text{ }^{\circ}\text{C}^{-1}$ , upon cooling from  $85.0 \text{ }^{\circ}\text{C}$  to  $33.5 \text{ }^{\circ}\text{C}$ ?  
**A** 0.745 J  
**B** 15.8 J  
**C** 167 J  
**D** 3560 J
- Consider the following reaction:  
 $6\text{CO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{C}_6\text{H}_{12}\text{O}_6(\text{s}) + 6\text{O}_2(\text{g}) \Delta H = +2824 \text{ kJ mol}^{-1}$   
The enthalpy change associated with the production of 10.0 g of  $\text{C}_6\text{H}_{12}\text{O}_6$  is  
**A** 15.7 kJ  
**B** 28.2 kJ  
**C** 50.8 kJ  
**D** 157 kJ.
- For the following process:  
 $\text{NaCl}(\text{s}) \rightleftharpoons \text{NaCl}(\text{l})$   
**A** the process is endothermic and  $\Delta H$  is positive.  
**B** the process is endothermic and  $\Delta H$  is negative.  
**C** the process is exothermic and  $\Delta H$  is positive.  
**D** the process is exothermic and  $\Delta H$  is negative.
- The dissolving process for ammonium nitrate is endothermic. What will happen to the temperature of a beaker of water when some solid ammonium nitrate is dissolved in it?  
**A** The temperature will increase.  
**B** The temperature will decrease.  
**C** The temperature will not change.  
**D** Not enough information is given to predict changes in the temperature.

- 5 Which one of the following statements is *true* about exothermic reactions?
- A They always release heat.
  - B They always occur quickly.
  - C They always involve combustion.
  - D They always produce gases.
- 6 If 3600 J of heat are added to 180 g of  $\text{C}_2\text{H}_5\text{OH}(\text{l})$ , its temperature increases from  $18.5\text{ }^\circ\text{C}$  to  $28.5\text{ }^\circ\text{C}$ . What is the specific heat capacity of  $\text{C}_2\text{H}_5\text{OH}(\text{l})$ ?
- A  $0.500\text{ J g}^{-1}\text{ }^\circ\text{C}^{-1}$
  - B  $2.00\text{ J g}^{-1}\text{ }^\circ\text{C}^{-1}$
  - C  $20.0\text{ J g}^{-1}\text{ }^\circ\text{C}^{-1}$
  - D  $200\text{ J g}^{-1}\text{ }^\circ\text{C}^{-1}$
- 7 A known mass of ethanol was burned and the heat evolved increased the temperature of a known mass of water in the beaker above the burner.

The following results were obtained:

mass of ethanol burned = 0.69 g

mass of water in beaker = 350 g

initial temperature of water =  $14.0\text{ }^\circ\text{C}$

final temperature of water =  $23.0\text{ }^\circ\text{C}$

Calculate the heat produced when one mole of ethanol is burned.

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END OF TEST