2.17 Reversible Reactions and Equilibrium: 10-minute Pack

AQA 8464 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Some chemical reactions are reversible.

(a) Define the term 'reversible reaction'. **(1)**

(b) State what the symbol ⇌ represents when written in a chemical equation. **(1)**

(Total for Question 1 is 2 marks)

2 For each statement about reversible reactions and equilibrium, state whether it is true or false.

(a) 'A closed system means that no matter can enter or leave the reaction mixture.' **(1)**

(b) 'At dynamic equilibrium, the forward and reverse reactions have both stopped.' **(1)**

(c) 'At equilibrium, the concentrations of reactants and products are always exactly equal to each other.' **(1)**

(d) 'The symbol ⇌ in an equation shows that a reaction is reversible.' **(1)**

(Total for Question 2 is 4 marks)

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3 Cobalt chloride paper is used in the laboratory as a test for water. Anhydrous cobalt chloride, $CoCl_2$, is blue. When water is added, it forms hydrated cobalt chloride, $CoCl_2.6H_2O$, which is pink. This is a reversible reaction:

$CoCl_2( ) + 6H_2O( ) \rightleftharpoons CoCl_2.6H_2O( )$

(a) Complete the equation above by writing the correct state symbol in each of the three brackets. **(1)**

(b) State the colour change observed when water is added to anhydrous cobalt chloride. **(1)**

(c) State whether the forward reaction (hydration, left to right as written) is exothermic or endothermic. **(1)**

(Total for Question 3 is 3 marks)

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Mark scheme · 2.17 Reversible Reactions and Equilibrium: 10-minute Pack

Question 1

(a) a reaction in which the products can react together (under different conditions) to reform the original reactants oe **B1**

(a) Answer: A reversible reaction is one in which the products of the reaction can react to reform the original reactants.

(b) shows that the reaction is reversible / can proceed in both the forward and reverse directions oe **B1**

(b) Answer: It shows that the reaction is reversible: it can proceed in both the forward and the reverse direction.

Question 2

(a) True **B1**

(a) Answer: True.

(b) False (they continue to occur, at equal rates) oe **B1**

(b) Answer: False: the forward and reverse reactions continue to occur, at equal rates.

(c) False **B1**

(c) Answer: False.

(d) True **B1**

(d) Answer: True.

Question 3

(a) all three correct: $CoCl_2(s) + 6H_2O(l) \rightleftharpoons CoCl_2.6H_2O(s)$ **B1** cao

(a) Answer: $CoCl_2(s) + 6H_2O(l) \rightleftharpoons CoCl_2.6H_2O(s)$

(b) changes from blue to pink oe **B1**

(b) Answer: The solid changes colour from blue to pink.

(c) exothermic **B1**

(c) Answer: Exothermic.

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