Reversible Reactions

A12.5.1–A12.5.2

Name: _____ Date: _____

1. Dynamic equilibrium

1.1 Define dynamic equilibrium. 1.2 Tick which statements are required: reversible; closed; equal rates; equal concentrations; reactions continue.

1.3 Sealed flask, equal rates. Open vessel, gas escapes. Sealed, forward faster than reverse. Which are at equilibrium?

2. Concentration $A + B \rightleftharpoons C + D$

State the shift and reason: add A; remove A; add C; remove D.

3. Temperature

3.1 Forward exothermic: effect of increasing T on position and on product yield.

3.2 Forward endothermic: effect of increasing T.

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4. Pressure

Equilibrium	Increase pressure
$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$	
$H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$	
$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$	
$CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$	

4.1 Why are solids not counted?

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5. Mixed challenges

5.1 $2SO_2 + O_2 \rightleftharpoons 2SO_3$, forward exothermic, increase P. 5.2 Same, increase T. 5.3 A(aq)+B(aq)⇌C(aq), add C. 5.4 Same, remove A.

6. Examination-style

(a) Define dynamic equilibrium + one condition [3]. (b) Haber equation, increase P [2]. (c) Exothermic forward, increase T, yield [2]. (d) Add reactant [2].

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7. Extended

Explain why ‘the reaction stops at equilibrium’ and ‘increasing pressure always shifts right’ are both wrong.

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Source note

Teacher PowerPoint is the original PDF. Student and teacher workbooks were markdown extracts. Exam 10.1 mark split is 1+1+1 in the workbook and 2+1 in the PDF slides — same science, different split.