

Chemistry Topic 5 Rates and equilibrium -REVISION

Rates	
1. How can you measure rate?	Measure the amount of reactant used up or the amount of product formed over time
2. State the equations needed to measure rate (2marks)	$\text{mean rate of reaction} = \frac{\text{quantity of reactant used}}{\text{time taken}}$ $\text{mean rate of reaction} = \frac{\text{quantity of product formed}}{\text{time taken}}$
3. What are the units of rate? (2marks)	g/s or cm ³ /s HT – mol/s
4. What is activation energy?	The minimum amount of energy the particles need to react during a collision
5. Why are catalysts important? (2marks)	They increase the rate of chemical reactions, whilst reducing costs.
6. Can we use the same catalyst for all reactions?	No – different reactions used different catalysts
7. In biological systems what are the catalysts called?	Enzymes
8. What needs to happen for a chemical reaction to take place? (2marks)	Particles need to collide with each other with sufficient energy
9. What do catalysts do?	Change the rate of chemical reactions, without being used up in the reaction
10. Describe the effect of increasing the temperature on rate of reaction? (3marks)	Rate increases The particles will collide more frequently and more energetically
11. Describe the effect of increasing concentration on rate of reaction (3marks)	Rate increases There are more particles per unit volume The collision frequency is increased
12. Describe the effect of increasing pressure on rate of reaction (3marks)	Rate increases There are more particles per unit volume The collision frequency is increased
13. Describe the effect of increasing surface area on rate of reaction (3marks)	Rate increases Greater area for the particles to collide The collision frequency is increased
14. Show catalysts on an energy profile diagram (2marks)	

Equilibrium	
15. What is equilibrium?	Equilibrium is reached when the forward and reverse reactions occur at exactly the same rate.
16. How can you change the direction of a reversible reaction?	Change the condition (e.g. heat/cool it)
17. What happens during an endothermic reaction?	Heat is taken in from the surroundings
18. What happens during an exothermic reaction?	Heat is transferred to the surroundings
19. If a reversible reaction is endothermic in one direction, what will it be in the other?	Exothermic
20. Give an example of a use of exothermic reactions:	Self-heating cans / hand warmers
21. Give an example of an exothermic reaction:	Combustion
22. Give an example of a use of endothermic reactions:	Sports injury packs
23. Give an example of an endothermic reaction:	Thermal decomposition
24. Give an example of a reversible reaction	Ammonium chloride \leftrightarrow ammonia + hydrochloric acid
25. Draw the arrow for a reversible reaction	\rightleftharpoons
26. Describe the energy transferred during a reversible reaction in each direction	The same amount of energy is transferred in the forward and reverse reactions
27. What is a reversible reaction?	A reaction in which the products of the reaction can reform to make the original reactants
Equilibrium HT	
1. If the temperature is raised what happens to the position of equilibrium?	It will go in the endothermic direction
2. If the temperature is lowered what happens to the position of equilibrium?	It will go in the exothermic direction
3. If the pressure is raised what happens to the position of equilibrium?	It will go to the side with few molecules
4. If the pressure is lowered what happens to the position of equilibrium?	It will go to the side with more molecules