

APOLLO

Chemical Equilibrium

FBISE Chemistry Class 9 (SSC-I)

Domain B: Physical Chemistry

17 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

34.	A student studies the reversible dehydration equilibrium of a hydrated salt: $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}_{(s)} \rightleftharpoons \text{CuSO}_{4(s)} + 5\text{H}_2\text{O}_{(g)}$ The blue copper(II) sulfate crystals slowly turn into a white powder when heated. The appearance of the white powder indicates that the equilibrium shifted toward:	The forward reaction, which is endothermic	The forward reaction, which is exothermic	The reverse reaction, which is endothermic	The reverse reaction, which is exothermic
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(ix)	How a closed system may contribute to the establishment of equilibrium in reversible reactions? Give one example.	1+2	OR	How do the following air pollutants cause harm? درج شدہ ہوائی آلودگیاں کیسے نقصان دہ ہیں؟ a) Carbon monoxide ب) Methane میتھین	03
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(viii)	Write three conditions required for chemical equilibrium.	03
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(viii)	What is a reversible chemical reaction? Give one example.	1.5 + 1.5 = 3
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(ix)	What is chemical equilibrium? State the conditions for a reversible reaction to reach equilibrium in a closed system.	1+2
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(viii)	State the physical change observed by adding water to CuSO_4. Also write its reversible balanced chemical reaction. پانی کو CuSO_4 میں شامل کرنے سے کیا فزیکل تبدیلی رونما ہوتی ہے؟ اس کا متوازن ریورسبل کیمیائی	03
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5.	For a reversible reaction, why might the reaction not go to completion?	Products never form	Forward reaction is faster than backward	Backward reaction occurs simultaneously	Energy is not involved
6.	Which reaction products correctly show what happens when an acid reacts with a	Salt + CO_2 + H_2O	Salt + H_2 + NH_3	Salt + N_2 + H_2O	Salt only

1.5 + 1.5	OR	$CuSO_4 \cdot 5H_2O_{(blue\ solid)} \rightleftharpoons CuSO_{4(white\ solid)} + 5H_2O$ How heating will affect the equilibrium in given reaction?
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A reaction that does not go to completion is called: ■	Irreversible	Endothermic	Reversible	Exothermic
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(vi)	$CoCl_2 \cdot 6H_2O_{(pink\ solid)} \rightleftharpoons CoCl_{2(blue\ solid)} + 6H_2O$ Describe the effect of addition of water on equilibrium in given reaction.	03	OR	Write the dissociation equations of sulfuric acid (H_2SO_4) and sodium hydroxide (NaOH) in aqueous solution.	1.5 + 1.5
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Which symbol shows a reversible reaction?	$\rightarrow$	$\rightleftharpoons$	$=$	$\leftrightarrow$
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1+1 +1	OR	What is meant by reversible chemical reaction? Does it ever go to completion? Give reason.	1+1 +1
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(v)	$CoCl_2 \cdot 6H_2O_{(pink\ solid)} \rightleftharpoons CoCl_{2(blue\ solid)} + 6H_2O$ How is above reaction affected by addition of water?	03
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(vii)	Consider following equilibrium. $CoCl_2 \cdot 2H_2O(s) + Heat \rightleftharpoons CoCl_2(g) + H_2O(g)$ Predict the direction of reaction when following changes are applied on this system at equilibrium. a. Heating the system. b. Addition of water c. Removal of water	1+1+1
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(viii)	Give the ways a closed system contribute to the establishment of equilibrium in reversible reactions?	03
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What is nutrition? Why is it essential for the proper functioning of the human body? غذائیت (Nutrition) کیا ہے؟ یہ انسانی جسم کے افعال کے لیے کیوں ضروری ہے؟	2+1	OR	Why is a closed system necessary for a reversible reaction to achieve equilibrium? Explain briefly. ریورسیبل ری ایکشن میں ایکولیریم حاصل کرنے کے لیے کلوژڈ سسٹم کیوں ضروری ہے؟ مختصر وضاحت	03
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(ix)	What happens when water is added to anhydrous copper(II) sulfate? How this change in physical condition redirects the reversible reaction?	1+2
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