18.1 Further Aspects of Acids & Bases

Question Paper

Course	DP IB Chemistry
Section	18. Acids & Bases (HL only)
Topic	18.1 Further Aspects of Acids & Bases
Difficulty	Hard

Time allowed: 10

Score: /5

Percentage: /100

Question 1

Using appropriate molar ratios which mixtures could act as buffers?

I. NaOH and CH_3COOH

II. CH_3NH_2 and CH_3NH_3Cl

III. NH_3 and HCl

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[1 mark]

Question 2

Consider the following equation

$$AgCl + 2NH_3 \rightarrow [Ag(NH_3)_2]^+ + Cl^-$$

Which of the following statements is correct?

A. Silver is acting as a Lewis base

B. AgCl is acting a Lewis base

C. NH_3 is acting as a Brønsted-Lowry base

D. Silver ions are acting as a Lewis acid

[1 mark]

Question 3

Which of the following salts would produce a solution with the highest pH if dissolved in water?

A. RbCl

B. $CuSO_4$

C. KCl

D. Na_2CO_3

[1 mark]

Question 4

The acid–base indicator bromophenol blue changes colour from yellow to blue over a pH range of 3.0–4.6. Which statement is correct?

I. The pK_a is between 3.0 and 4.6

II. In a neutral solution [HIn] > [In^-]

III. It is a suitable indicator for a strong acid, weak base titration

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[1 mark]

Question 5

A titration was carried out using 25.00 cm^3 of 0.100 mol dm^{-3} propanoic acid with 0.100 mol dm^{-3} sodium hydroxide. The indicator phenolphthalein was used to determine the equivalence point. Phenolphthalein has a pH range of 8.3 to 10.0.

If hydrochloric acid was used instead of propanoic acid of the same concentration, which of the following would remain the same?

A. The volume of base needed to reach the equivalence point

B. The pH at the equivalence point

C. The y intercept on the pH curve

D. The colour of the solution just before equivalence had been reached

[1 mark]