ICSE Chemistry Paper

Total Marks 80 Marks

- 1. What is the difference between:
- (a) an alkali and a base,

(b) the chemical nature of an aqueous solution of HCl and an aqueous solution of NH<sub>3</sub>.

[3 Marks]

- 2. Name the ions furnished by:
- (a) bases in solution, (b) an acid.

[2 Marks]

- 3. Give one example in each case:
- (a) A basic oxide which is soluble in water,
- (b) A hydroxide which is highly soluble in water,
- (c) A basic oxide which is insoluble in water,
- (d) A hydroxide which is insoluble in water,
- (e) A weak mineral acid,
- (f) A base which is not an alkali,
- (g) An oxide which is a base,
- (h) A hydrogen-containing compound which is not an acid,
- (i) A base which does not contain a metal ion.

[9 Marks]

4. You have been provided with three test tubes. One of them contains distilled water and the other two have an acidic solution and a basic solution respectively. If you are given red litmus paper, how will you identify the contents of each test tube?

[ 3 Marks ]

5. HCl, HNO<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>OH, C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> all contain H atoms but only HCl and HNO<sub>3</sub> show acidic character. Why? [ 3 Marks ]

6. (a) Dry HCl gas does not change the colour of dry litmus paper. Why? (b) Is PbO<sub>2</sub> a base or not? Comment.

(c) Do basic solutions also have  $H_{+(aq)}$ ? Explain why they are basic by taking an example?

[ 6 Marks ]

7. How would you obtain:

(a) A base from another base

(b) An alkali from a base

(c) Salt from another salt?

[ 3 Marks ]

8. Write balanced equations to satisfy each statement.

(a) Acid + Active metal  $\rightarrow$  Salt + Hydrogen

(b) Acid + base  $\rightarrow$  Salt + Water

(c) Acid + Carbonate or bicarbonate → Salt + Water + carbon dioxide

(d) Acid + sulphite or bisulphite  $\rightarrow$  salt + water + sulphur dioxide

(e) Acid + Sulphide  $\rightarrow$  Salt + hydrogen sulphide

[ 5 Marks ]

9. The skin has and needs natural oils. Why is it advisable to wear gloves while working with strong alkalis?

[ 2 Marks ]

#### 10. Complete the table:

Indicator	Neutral	Acidic	Alkaline
Litmus	Purple		
Phenolphthalein	Colourless		

[ 4 Marks ]

11. What do you understand by pH value? Two solutions X and Y have pH values of 4 and 10, respectively. Which one of these two will give a pink colour with a phenolphthalein indicator? [ 4 Marks ]

12. You are supplied with five solutions: A, B, C, D and E with pH values as follows:

A = 1.8, B = 7, C = 8.5, D = 13 and E = 5

Classify these solutions as neutral, slightly or strongly acidic and slightly or strongly alkaline.

Which solution would be most likely to liberate hydrogen with:

(a) Magnesium powder

(b) Powered zinc metal. Give a word equation for each reaction.

[ 4 Marks ]

13. Distinguish between:

(a) A common acid-base indicator and a universal indicator

(b) The acidity of bases and basicity of acids

(c) Acid and alkali (other than indicators)

[ 4 Marks ]

14. What should be added to

(a) Increase the pH value

(b) Decrease the pH value of a neutral solution?

[ 3 Marks ]

15. How does tooth enamel get damaged? What should be done to prevent it?

[ 3 Marks ]

16. When you use universal indicator, you see that solutions of different acids produce different colours. Indeed, the solution of the same acid with different concentrations will also give different colours. Why?

17. (a) A solution has a pH of 7. Explain how you would (i) increase its pH; (ii) decrease its pH

(b) If a solution changes the colour of litmus from red to blue, what can you say about its pH?

(c) What can you say about the pH of a solution that liberates carbon dioxide from sodium carbonate?

[ 3 Marks ]

18. Solution P has a pH of 13, solution Q has a pH of 6 and solution R has a pH of 2.

Which solution

(a) will liberate ammonia from ammonium sulphate on heating?

(b) is a strong acid?

(c) contains molecules as well as ions?

[ 3 Marks ]

19. Define the following and give two examples in each case: (a) a normal salt, (b) an acid salt, (c) a mixed salt. Solution:

20. Answer the following questions related to salts and their preparations:

(a) What is salt?

(b) What kind of salt is prepared by precipitation?

(c) Name a salt prepared by the direct combination. Write an equation

for the reaction that takes place in preparing the salt you have named. (d) Name the procedure used to prepare a sodium salt such as sodium sulphate.

[ 6 Marks ]

#### 21. Complete the following table:

Reactants	Products	Method
Soluble base + Acid (dil)	Salt + water	Neutralisation Titration
Metal + Non-metal	Salt (soluble/ insoluble)	
Insoluble base +	Salt (soluble) + water	
Active metal + Acid (dil)	+	
Soluble salt solution (A) +	Precipitated salt +	
Soluble salt solution (B)	Soluble salt	

Carbonate/ bicarbonate + Acid (dil)	Salt + +	Decomposition of carbonate
Chlorides/nitrates + Acid (conc)	+	Decomposition of chlorides and nitrates

[ 10 Marks ]