23. Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions.

(i) Zinc reacts with silver nitrate to produce zinc nitrate and silver.

(ii) Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide.

[2019]...[3M]

24. (i) While electrolysing water before passing the current some drops of an acid are added. Why? Name the gases liberated at cathode and anode. Write the relationship between the volume of gas collected at anode and the volume of gas collected at cathode.

(ii) What is observed when silver chloride is exposed to sunlight? Give the type of reaction involved. **[2023]...[3M]**

2 : Acids, Bases and Salts

1. How does the flow of acid rain water into a river make the survival of aquatic life in the river difficult? **[2008] ...[1M]**

2. Fresh milk has a pH of 6. When it changes into curd (yogurt), will its pH value increase or decrease? Why? **[2009] ...[1M]**

3. Which of the following observations is true about dilute solution of acetic acid? **[2012] ...[1M]**

(a) It smells like vinegar and turns red litmus blue

(b) It smells like onion and turns blue litmus blue

(c) It smells like orange and turns red litmus blue

(d) It smells like vinegar and turns blue litmus red

4. A student adds 4 ml of acetic to a test tube containing 4 ml of distilled water. He then shakes the test tube and leaves it to settle. After about 10 minutes he observes: **[2012] ...[1M]**

(a) A layer of water over the layer of acetic acid

(b) A layer of acetic acid over the layer of water

(c) A precipitate settling at the bottom of the test tube

(d) A clear colourless solution

5. A student prepared 20% sodium hydroxide solution in a beaker containing water. The observations noted by him are given below. **[2013] ...[1M]**

(I) Sodium hydroxide is in the form of pellets.

(II) It dissolves in water readily.

(III) The beaker appears cold when touched from outside.

(IV) Red litmus paper turns blue when dipped into the solution.

The correct observations are:

(a) (I), (II), and (III) (b) (II), (III) and (IV)

(c) (III), (IV) and (I) (d) (I), (II) and (IV)

6. In an experiment to study the properties of acetic acid, a student takes about 2 ml of acetic acid in a dry test tube. He adds about 2 ml of water to it and shakes the test tube well. He is likely to observe that: **[2013] ...[1M]**

(a) The acetic acid dissolves readily in water.

(b) The solution becomes light orange.

(c) Water floats over the surface of acetic acid.

(d) Acetic acid floats over the surface of water.

7. The chemical formula for plaster of Paris is : **[2020] ...[1M]**

(a) $CaSO_4 \cdot 2H_2O$ (b) $CaSO_4 \cdot H_2O$

(c) $CaSO_4 \cdot \frac{1}{2}H_2O$ (d) $2CaSO_4 \cdot H_2O$

8. Baking soda is a mixture of : **[2020] ...[1M]**

(a) Sodium carbonate and acetic acid

(b) Sodium carbonate and tartaric acid

(c) Sodium hydrogen carbonate and tartaric acid

(d) Sodium hydrogen carbonate and acetic acid

9. Which of the following oxide(s) is/are soluble in water to form alkalies? **[2021] ...[1M]**

(i) Na_2O

(ii) SO_2

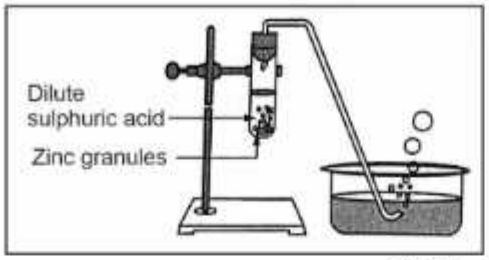
(iii) K_2O

(iv) NO_2

(a) (i) and (iii) (b) (i) only

(c) (ii) and (iv) (d) (iii) only

10. Study the diagram given below and identify the gas formed in the reaction.



[2021] ...[1M]

(a) Carbon di-oxide which extinguishes the burning candle
(b) Oxygen due to which the candle burns more brightly
(c) Sulphur dioxide which produces a suffocating smell
(d) Hydrogen which while burning produces a popping sound

11. Which of the options in the given table are correct?

Option	Natural Source	Acid Present
(i)	Orange	Oxalic acid
(ii)	Sour milk	Lactic acid
(iii)	Ant sting	Methanoic acid
(iv)	Tamarind	Acetic acid

[2021] ...[1M]

(a) (i) and (ii) (b) (i) and (iv)
(c) (ii) and (iii) (d) (iii) and (iv)

12. Select from the following statement which is true for bases. **[2021] ...[1M]**

(a) Bases are bitter and turn blue litmus red.
(b) Bases have a pH less than 7.
(c) Bases are sour and change red litmus to blue.
(d) Bases turn pink when a drop of phenolphthalein is added to them.

13. Study the following table and choose the correct option :

	Salt	Parent Acid	Parent Base	Nature of Salt
(a)	Sodium Chloride	HCl	NaOH	Basic
(b)	Sodium Carbonate	H_2CO_3	NaOH	Neutral
(c)	Sodium Sulphate	H_2SO_4	NaOH	Acidic
(d)	Sodium Acetate	CH_3COOH	NaOH	Basic

[2021] ...[1M]

14. Consider the pH value of the following acidic samples :

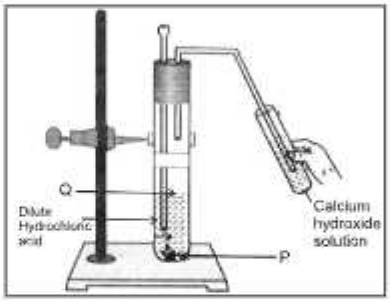
S.No.	Sample	pH value
1.	Lemon juice	2.2
2.	Gastric juice	1.2
3.	Vinegar	3.76
4.	Dil. Acetic acid	3.0

The decreasing order of their H^+ ion concentration is

[2021] ...[1M]

(a) 3 > 4 > 1 > 2 (b) 2 > 1 > 3 > 4
(c) 2 > 1 > 4 > 3 (d) 3 > 4 > 2 > 1

15. Study the experimental set up shown in given figure and choose the correct option from the following :



[2021] ...[1M]

	P	Q	Change observed in calcium hydroxide solution
(a)	K_2CO_3	Cl_2 gas	No change
(b)	$KHCO_3$	CO_2 gas	No change
(c)	$KHCO_3$	H_2 gas	Turns milky
(d)	K_2CO_3	CO_2 gas	Turns milky

16. Which of the following salts do not have the water of crystallisation? **[2021] ...[1M]**

(i) Beaching Powder
(ii) Plaster of Paris
(iii) Washing soda
(iv) Baking soda

(a) (ii) and (iv) (b) (i) and (iii)
(c) (ii) and (iii) (d) (i) and (iv)

17. **Assertion (A) :** Sodium hydrogen carbonate is used as an ingredient in antacids.

Reason (R) : $NaHCO_3$ is a mild non-corrosive basic salt. **[2021] ...[1M]**

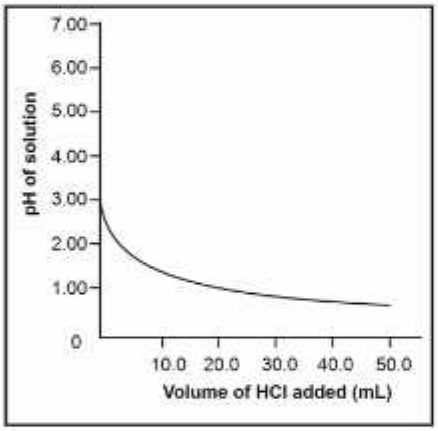
(a) Both (A) and (R) are true and (R) is the correct explanation of (A).

(b) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(c) (A) is true, but (R) is false

(d) (A) is false, but (R) is true

18. 50.0 mL of tap water was taken in a beaker. Hydrochloric acid was added drop by drop to water. The temperature and pH of the solution was noted. The following graph was obtained. Choose the correct statements related to this activity.



(i) The process of dissolving an acid in water is highly endothermic.

(ii) The pH of the solution increases rapidly on addition of acid.

(iii) The pH of the solution decreases rapidly on addition of acid.

(iv) The pH of tap water was around 7.0.

[2021] ...[1M]

(a) (i) and (ii) (b) (i) and (iii)

(c) (iii) and (iv) (d) (ii) and (iv)

19. When Sodium bicarbonate reacts with dilute hydrochloric acid, the gas evolved is **[2023] ...[1M]**

(a) Hydrogen; it gives pop sound with burning match stick.

(b) Hydrogen; it turns lime water milky.

(c) Carbon dioxide; it turns lime water milky.

(d) Carbon dioxide; it blows off a burning match stick with a pop sound.

20. Acid present in tomato is : **[2023] ...[1M]**

(a) Methanoic acid (b) Acetic acid

(c) Lactic acid (d) Oxalic acid

21. Sodium hydroxide is termed an alkali while Ferric hydroxide is not because : **[2023] ...[1M]**

(a) Sodium hydroxide is a strong base, while Ferric hydroxide is a weak base.

(b) Sodium hydroxide is a base which is soluble in water while Ferric hydroxide is also a base but it is not soluble in water.

(c) Sodium hydroxide is a strong base while Ferric hydroxide is a strong acid.

(d) Sodium hydroxide and Ferric hydroxide both are strong base but the solubility of Sodium hydroxide in water is comparatively higher than that of Ferric hydroxide.

22. The name of the salt used to remove permanent hardness of water is : **[2023] ...[1M]**

(a) Sodium hydrogen carbonate ($NaHCO_3$)

(b) Sodium chloride (NaCl)

(c) Sodium carbonate decahydrate ($Na_2CO_3 \times 10H_2O$)

(d) Calcium sulphate hemihydrate

$$(CaSO_4 \cdot \frac{1}{2}H_2O)$$

23. Write the chemical formula for washing soda. How may it be obtained from baking soda? Name an industrial use of washing soda other than washing clothes. **[2008] ...[2M]**

24. A compound which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water. Identify the compound. Write the chemical equation for its preparation. For what purpose is it used in hospitals? **[2009] ...[2M]**

25. Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason. **[2019] ...[2M]**

26. What is observed when 2 mL of dilute hydrochloric acid is added to 1 g of sodium carbonate taken in a clean and dry test tube? Write chemical equation for the reaction involved. **[2019] ...[2M]**