CHEMISTRY

BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

ACIDS, BASES AND SALTS

Example

1. A first aid manusl suggests that vinegar should be used to treat wasp stings and aking soda for bee stings.

(i) What dows this information tell you about the chemical nature of the wasp stings ?

(ii) If there were no baking soda in the house, what other household substance could you use to treat bee stings

2. A' is a soluble acidic oxide when dissolve in water ,what will be the pH of solution of A

A. 7

B. $m \text{ or } ethan7$

C. $\leq ssthan7$

D. $nonoftheabove$

Answer: C

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3. A road tanker carrying an acid was involved in an accident and its contents spilled on the road. At the side of the road, iron drain covers began melting and fizzing as the acid ran over them. A specialist was celled to se if the acid actually leaked into the nearby river.

(a) Explain how the specialist could carry out a simple test to see if the river water contains some acid or not.

(b) The word 'melting' is incorrectly used in the report. Suggest a better

name that should have been used for the same purpose.

(c) Explain why the drain covers began fizzing as the acid ran over them.

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4. A student dipped a strip of pH paper in distilled water taken in a tube. As expected, the pH paper acquired green colour. He then dissolved a pinch of common salt in the same tube. What will be the expected change in colour of the pH paper ?

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5. Five solutions A,B,C,D and E when tested with universal indicator showed pH as 4,1,11,7 and 9, respectively. Which solution is

(a) neutral?

(b) strongly alkaline?

(c) strongly acidic?

(d) weakly acidic?

(e) weakly alkaline?

Arrange the pH in increasing order of hydrogen-ion concentration.

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6. Choosing only the substances from the list given in the box below, write equations for the reactions which you would used in the laboratory to obtain :

(i)Sodium sulphate (ii)Coper sulphate
(iii)Iron (II) sulphate (iv)Zinc carbonate.

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N C E R T In Text Problems

1. You have been provided with three test tubes. One of them contains distilled water and the other two contain an acidic solution and a basic

solution, respectively. If you are given only red litmus paper, how will you identify the contents of each test tube?

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2. Why should curd and sour substances not be kept in brass and copper vessels?

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3. Which gas is usually liberated when an acid reacts with a metal? Illustrate with an example. How will you test for the presence of this gas?

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4. Metal compound A reacts with dilute hydrochloric acid to produce effervescence. The gas evolved extinguishes a burning candle. Write a

balanced chemical equation for the reaction if one of the compounds formed is calcium chloride.

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5. Why do HCl, HNO_3, etc., show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character?

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6. Why does an aqueous solution of an acid conduct electricity?

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7. Why does dry HCl gas not change the colour of the dry litmus paper?

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8. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

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9. How is the concentration of hydronium ions $\left(H_3O^+\right)$ affected when a solution of an acid is diluted?

A. increases

B. decreases

C. no change

D. can not predict

Answer: B

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10. How is the concentration of hydroxide ions(OH^-) affected when excess base is dissolved in a solution of sodium hydroxide?

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11. You have two solutions, A and B. The pH of solution A is 6 and pH of solution B is 8. Which solution has more hydrogen ion concentration? Which of this is acidic and which one is basic?

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12. What effect does the concentration of$H^+(aq)$ ions have on the nature of the solution?

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13. Do basic solutions also have $H^+(aq)$ ions? If yes, then why are these basic?

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14. Under what soil condition do you think a farmer would treat the soil of his fields with quick lime (calcium oxide) or slaked lime (calcium hydroxide) or chalk (calclum carbonate)?

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15. Name the substance which on treatment with chlorine yields bleaching powder.

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16. Name the sodium compound which is used for softening hard water.

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17. What will happen if a solution of sodium hydrocarbonate is heated? Give the equation of the reaction involved.

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18. Write an equation to show the reaction between Plaster of Paris and water

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N C E R T End Exercise

1. A solution turns red litmus blue. Its pH is likely ot be

A. 2

B. 4

C. 7

D. 10

Answer: D

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2. A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains

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3. 10 mL of a solution of NaOH is found to be completely neutralised by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount HCl solution (the same solution as before) required to neutralise it will be

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4. Which one of the following types of medicines is used for treating indigestion?

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5. Write word equations and them balanced equations for the reactions taking place when:

(a). Dilute sulphuric acid reacts with zinc granules.

(b). Dilute hydrochloric acid reacts with magnesium ribbon.

(c). Dilute sulphuric acid reacts with aluminium powder.

(d). dilute hydrochloric acid reacts with iron filings.

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6. Compounds such as alcohols and glucose also contain hydrogen but are not categorised as acids. Describe an Activity to prove it.

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7. Why does distilled water not conduct electricity, whereas rain water does?

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8. Why do acids not show acidic behaviour in the absence of water?

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9. Five solutions A,B,C,D and E when tested with universal indicator showed pH as 4,1,11,7 and 9, respectively. Which solution is

(a) neutral?

(b) strongly alkaline?

(c) strongly acidic?

(d) weakly acidic?

(e) weakly alkaline?

Arrange the pH in increasing order of hydrogen-ion concentration.

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10. Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, while acetic acid (CH_3COOH) is added to test tube B. Amount and concentration taken for both the acids are same. In which test tube will the fizzing occur more vigorously and why?

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11. Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd? Explain your answer.

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12. A milkman adds a very small amount of baking soda to fresh milk.

(a) Why does he shift the pH of the fresh milk from 6 to slightly alkaline?

(b) Why does this milk take a long time to set as curd?

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13. Plaster of Paris should be stored in a moisture-proof container. Explain why?

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14. What is a neutralisation reaction? Give two examples.

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15. Give two important uses of washing soda and baking soda.

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Very Short Answer Questions

1. Give the names and formulae of two (i) strong monobasic acids (ii) two weak dibasic acids.

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2. How will you show that acetic acid is a monobasic acid ?

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3. Why alkalies like sodium hydroxide and potassium hydroxide should not be left exposed to air ?

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4. The pH of an aqueous solution decreases form 3 to 2. What will happen to the nature of the solution ?

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5. What happens to the crystals of washing soda when exposed to air ?

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6. State whether an aqueous solution of washing soda is acidic or alkaline.

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7. What is the chemical name and chemical formula of baking soda ?

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8. When a few drop os phenolphthalein indicator were added to the solution of some compound 'A', the solution became pink. What does it indicate ?

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9. Which is a stronger acid ? A solution with pH 5 and a solution with pH 2?

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10. What is the nature of $NaHCO_3$ salt ?

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11. Give two examples of the salts belonging to the chloride family.

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12. What will be the colour acquired by a basic solution if a few drops of indicator methyl orange are added to it ?

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13. Name the gas evolved when dilute HCl reacts with sodium hydrogencarbonate. How is it recognised?

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14. Arrange the following in increasing order of their pH values :

NaOH solution, blood, lemon juice

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15. How does the pH change when the solution of base is diluted with water ?

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16. Which one or these has a higher concentration of H^+ ions ?

$1MHCl$ or $1MCH_3COOH$.

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17. Which bases are called alkalies ? Give an example of alkalies ?

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18. Name one natural source of each of the followign acids.

(a). Citric acid

(b). Oxalic acid

(c). Lactic acid

(d). Tataric acid.

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19. Write the name and chemical formula of the main product formed by heating baking soda.

Watch Video Solution

20. Write the names and chemical formulae of the products formed by heating gypsum at 373 K.

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21. A student dipped a strip of pH paper in distilled water taken in a tube. As expected, the pH paper acquired green colour. He then dissolved a pinch of common salt in the same tube. What will be the expected change in colour of the pH paper ?

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22. The pH of rain water collected from two cities A and B was found to be 6 and 5 respectively. The water of which city is more acidic ?

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23. Why does an aqueous solution of alcohol fail to conduct electric current ?

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24. Name the chemical substanc which constitutes bees sting.

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25. Which substance constitutes the enamel coating of our teeth ?

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26. What happens when a base reacts with a non-metallic oxide. What would you infer about the nature of the non-metallic oxide ?

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27. Name the acids and bases from which the following salts may be obtained. (i) Potassium sulphate (ii) Calcium chloride

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28. What will be the pH of the following salt solutions.

(i) Salt made from strong acid and strong base.

(ii) Salt made from strong acid and weak base.

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29. Give example of two substances having water of crystallisation. Write their formulaw also.

Watch Video Solution

30. What are pH values of distilled water and common salt solution ?

Watch Video Solution

31. Which is a stronger acid ? A solution with pH 5 and a solution with pH 2?

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32. The pH of three solutios A, B and C are 4, 9 and 6 respectively. Arrange them in increasing order of acidic strength.

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33. Name the acid and base tghat have constituted the salt ammonium nitrate.

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34. Suggest a way to reduce the alkaline nature of the soil.

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35. Which out of distilled water, tap water and sea water is the best conductor of electricity ?

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36. A few drops of sulphuric acid are added to water before electrolysis. Why ?

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37. Name the chemicals used in the Acid Fire Extinguisher and the gas evolved from it when used ?

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38. Write the chemical equation by the action of atmospheric CO_2 gas on bleaching powder when left exposed in open.

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39. Write chemical equation for the reaction of zinc metal on sodium hydroxide.

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40. A knife, which is used to cut a fruit, was immediately dipped into water containing drops of blue litmus solution. If the colour of the solution is changed to red, what inference can be drawn about the nature of the fruit and why ?

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41. What is the difference between slaked lime and lime water ?

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Short Answer Questions

1. How will you find pH of lemon juice ?

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2. A sample of bleahing powder was kept in an air tight container. After a month, it lost some of its chlorine content. How will ou account for it ?

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3. An aqueous solution of sodium carbonate is basic and not acidic. Assign reason.

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4. An old person complained of actue pain in the stomch. Doctor gave him a small antacid table and he got immediate relief. What actually happened ?

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5. A milkman adds very small amount of baking soda fresh milk. What happen to its pH ?

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6. A few drops of phenolphthalein indictor were added to an unknown solution A. It scquired pink colour Now another unknown solution B was added to it dropwise and the solution ultimately because colourless. Predict the nature of the solution A and B.

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7. A compound which is prepared from gypsum has the property of hardening when mixed with proper quantity of water. Identify the compound. Write chemical equation to preapar the compound. Mention one important use of the compound.

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8. The oxide of a metal M was water soluble. When a blue litmus strip was dipped in this solution, it did not undergo any change in colour. Predict the nuture of the oxide.

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9. Does tartaric acid help in making cake or bread fluffy ? Explain.

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10. A doctor applied surgical bandages on the fractured bones of a patient after making them wet. What changes are likely to occur ?

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11. A chemical compound having smell of chlorine is used to remove yellowness of white clothes in laundries. Name the compound and write

the chemical equation involved in its preparation.

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12. Explain giving reasons :

(i) Tartaric acid is a component of baking powder used in making cakes.

(ii) Gypsum, $CaSO_4.2H_2O$ is used in the manufacture of cement.

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13. What happens to the crystals of washing soda when exposed to air ?

Watch Video Solution

14. How is chloride of lime chemically different from calcium chloride " Why does chloride of lime gradually lose its chlorine when kept exposed to air ?

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15. State the chemical property in each case on which the following uses of baking soda are based :

(i) as an antacid.

(ii) as a constituent of baking powder.

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16. Crystals of copper sulphate are heated in a test tube fore some time.

(a) What is the colour of copper sulphate crystal (i) before heating (ii) after heating ?

(b) What is the cource of liquid droplets seen on the inner upper side of the test tube during the heating process ?

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17. A person is sufering from indigestion due to the intake of hot spicy food. What remedy you will prescribe to the patient ? Give the name of a

chemical that can give relief to him.

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18. (a) Give the chemical names of acids present in :

(i) ants (ii) lemon (iii) mikl (iv) tomato.

(b) Write the chemical names of two salts belonging to sodium family.

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19. Oxide of metals are basic ehile those of non-metals are acidic. Explain.

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20. What are antacids ? Name two compounds which are used as antacids ?

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21. (a) What would be the colour of the solution when copper oxide and dilute hydrochloric acid are mixed

(b) Write the chemical equation which represents that the effect of base in neutralised by the acid are vice versa.

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22. A white powder is added while baking breads and cakes to make them foft and fluffy. What is the name of the powder ? What are the main ingredients in it ? What are the functions of each ingredient ?

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23. What are the three products of 'Chlor-alkali process' ? Write one commercially or industrially important material each that can be prepared from eah of these products ?

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24. Why do HCl, HNO_3, etc., show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character?

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25. The pH of the mouth of a person is lower than 5.5. What changes will occur in his mouth ? How these changes can be controlled ? Write any two measures.

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26. (a) Why are some salts called hydrated salts ?

(b) Give two examples of white coloured hydrated slts alongwith their chemical formula.

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27. What is bleaching powder chemically called ? Give a reaction for its preparation. State one of its use.

Watch Video Solution

28. What are olfactory indicators ? Dry HCl gas does not change the colour of dry blur litmus. Give reasons.

Watch Video Solution

29. You are given two solution A and B. The pH of solutin A is 6 and pH of solution A is 6 and pH of solutin B is 8.

(i) Which solution is acidic and which is basic ?

(ii) Which solution has more H^+ ion concentration ?

(iii) Why si HCl a stronger acid than acetic acid ?

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30. Account for the following :

(a) Antacid tablets are used by a person suffereng from stomach pain.

(b) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid ?

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31. Answer the following :

(a) Why is Plaster of Paris written as $CaSO_4 1/2 H_2O$ How is it possible to have half a water molecule attached to $CaSO_4$?

(b) Why is sodium hydrogen carbonate an essential ingredient in antacids ?

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32. (a) Write the name given to bases that are highly soluble in water. Give an ezample.

(b) Why does bee using cause pain and irritation ? Rubbing of baking soda on the stinf area gives relief. How ?

Watch Video Solution

33. (i) Identify the compound of calcium which is yellowish powder and is used for disinfecting drinking water. Wtite its chemical name and formule. How is it manufactured ? Write the chemical equation for the reaction incolved. Also list two other used of the compound.

(ii) Write the balanced chemical equation of chlor-alkali process.

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34. A substance X which is used as an antacid reacts with dilute hydrochloric acid to produce a gas Y which is used in one type of fire-extinguisher. Name the substance X and gas Y. Write a balanced equation for the chemical reaction which takes place.

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35. Chemical Properties Of Acids And Bases

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36. In a gas jar containing hydrogen chloride gas, a dry blur litmus paper is dropped. What change is observed ? Now a blur litmus paper is moistened and dropped into the gas jar. State what is observed and give a reason for this.

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37. Explain why sodium hydroxide solution cannot be kept in aluminium conaainers ? Write equation for the reaction that may take place for the same.

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38. State what does pH of a solution signify. Three solutions A, B and C have pH values of 6, 2 and 10 respectively. Which of these solutions is highly acidic ? Which solution will turn red litmus blue ?

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39. A ehite chemical compound becomes hard on mixing proper quantity of water. It is also used to maintain joints in a fixed position. Name the chemical compound and write its chemical formula. Chemical equation to show what happens when water is added to this compound in proper quantity.

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40. (a) Define pH scale. Draw a figure showing variation of pH which change in concentration of H^+ (aq) and $OH^-(aq)$ ions.

(b) Mention of pH of acidic, basic and netural solutions respectively.

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41. What is the action of litums on (i) dry ammonia gas (ii) solution of ammonia gas in water ?

Watch Video Solution

42. State the observations you would make on adding sodium hydroxide to aqueous solution of

(i) ferrous sulphate (ii) aluminium chloride.

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43. (a) Name one natural source of each of the following acids.

(i) Citric acid (ii) Oxalic acid (iii) Lactic acid (iv) Tartaric acid

(b) Which one is commonly produced by all acids.

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44. 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed a gas ecolces which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilute solution of an acid.

Or

The pH of a salt used to amke tasty and crispy pakoras is 8.4. Identify the salt and write a chemical equation for its formation. List its two uses.

View Text Solution

45. (a) Identify the compound of calcium which is used for plastering fractured bones. With the help of chemical equation shwo how is it prepared and whether special precautions shoud be taken during the preparation of this compound

Or

Sweet tooth may lead to 'tooth decay'. Explain why ? What is the role of tooth paste in preventing cavity

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46. Why do HCl, HNO_3, etc., show acidic characters in aqueous solutions while solutions of compounds like alcohol and glucose do not show acidic character?

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47. (a) Why are some salts called hydrated salts ?

(b) Give two examples of white coloured hydrated slts alongwith their chemical formula.

Watch Video Solution

48. What is an olfactory indicator? Name two olfactory indicators. What is the effect of adding sodium hydroxide solution to these olfactory indicators?

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49. Answer the following :

(a) Why is Plaster of Paris written as $CaSO_4 1/2 H_2O$ How is it possible to have half a water molecule attached to $CaSO_4$?

(b) Why is sodium hydrogen carbonate an essential ingredient in antacids ?

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50. (a) Write the name given to bases that are highly soluble in water. Give an example.

(b) Why does bee using cause pain and irritation ? Rubbing of baking soda on the sting area gives relief. How ?

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51. A substance X which is used as an antacid reacts with dilute hydrochloric acid to produce a gas Y which is used in one type of fire-extinguisher. Name the substance X and gas Y. Write a balanced equation for the chemical reaction which takes place.

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52. (a) The blue colour of crystals of a substance changed on heating in a closed test tube but the colour was regained after sometime on cooling. Name the substance and write irts chemical formula. Explain the phenomenon invilved.

(b) Write name and chemical formula of two such compounds whose one formula unit is associated with 10 and 2 water molecules respectively.

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53. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

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54. What happens when an acid reacts with a metal hydrogencarbonate? Write equation of the reaction which takes place.

Watch Video Solution

55. Why should curd and sour substances not be kept in brass and copper vessels?

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56. If some one is suffereing from acidity in stomach, which of the following would you suggest as remedy. Orange juice, Coka Cola, Baking soda solution ?

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57. (a) What are the common names of . (a) $CaOCl_2$, and (b) $Na_2CO_3.10H_2O$?

(b) Why should plaster of Paris be stored in a moisture-proof container?

(c) Explain why, while diluting a concentrated acid, acid should be added to water and not water to the acid.

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58. How is chloride of lime chemically different from calcium chloride " Why does chloride of lime gradually lose its chlorine when kept exposed to air ?

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Long Answer Questions

1. (a) a solution has a pH of 7. Explain how you would you :

(i) increase its pH (ii) decreases its pH

(b) If a solution the colour of the 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 ?

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2. Wxplain why :

(i) Common salt becomes stick during the rainy season

(ii) Blue vitriol changes ot wihte upon heating

(iii) If bottle full of concentrated sulphuric acid is left open in the atmosphere by accident. The acid starts flowing out of the bottle of its own.

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3. (a) Name the raw materials used in the manufacture of sodium carbonate by Solvay process.

(b) How is sodium hydrogen carbonate formed during Solvay process separated from a mixture of NH_4Cl and $NaHCO_3$?

(c) How is sodium carbonate obtained from sodium hydrogen carbonate ?

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4. (a) What is the action of red litmus on (i) dry ammonia gas (ii) solution of ammonia gas in water ?

(b) State the observations you would make on adding ammonium hydroxide to aqueous solution of

(i) ferrous sulphate (ii) aluminium chloride.

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5. (a) Why does an aqueous solution of an acid conduct electricity ?

(b) How does the concentration of hydrogen ions $[H_3O]^+$ change when the solution of an acid is diluted with water ?

(c) Which has a higher pH value , a concentrated or dilute solution of hydrochloric acid ?

(d) what happens when hydrochloric acid reacts with (i) sodium bicarbonate placed in a test tube ?

(ii) zinc metal in a test tube ?

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6. (a) A gas is produced when conc. H_2SO_4 is added to solide sodium chloride taken in a test tube and the tube is heated. The gas coming out through the delivery tube is passed over a dry litmus paper and then over a moist litmus paper. What would you observe ? Explain your answer.

(b) Fresh mikl has pH of 6. When it changes to curd (yogurt(, will its pH value increase or decrease? Why ?

(c) What will be the colour of blure limus in a solution of sodium carbonate ?

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7. When electricity is passed through a comon salt solution, sodium hydroxide is produced along with the liberation two gases 'X' and 'Y'. The gas 'X' burns with a pop sound whereas 'Y' is used for disinfecting drinking water.

(i) Idenrify X and Y.

(ii) Give the chemical equation for the reaction stated above.

(iii) State the reaction of Y with dry slaked lime.

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8. Write the chemical name and formula of common salt. List two main sources of common salt in nature. Write any three uses of common slat. How is it connected to our freedom struggle ?

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9. What is tooth enamel chemically ? State the conditions when it starts corroding. What happens when food particles left in the mouth after eating degrade ? Why do doctors suggest use of tooth power/tooth paste to prevent tooth decay ?

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10. (a) Describe an activity with diageam to illustrate that the reaction of metal carbonates or metal hydrogen carbonates with acids produces carbon dioxide. Write the relevant equations of all the reactions that take place.

(b) Name any two forms in which calcium carbonate is found in nature.

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11. (i) Explain why is hydrochloric acid a strong acid and acetic acid, a weak acid ? How can it be verfied ?

(ii) Explain why equeous solution of an acid conducts electricity.

(iii) You have four solutions A, B,C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7.

(a) Identify rhe most acidic and most basic solutions.

(b) Arrange the above four solutions in the increasing order of H^+ ion concentration.

(c) State the change in colour of pH paper on dipping in solution C and d.

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12. Write the chemical name of $Na_2CO_3.10H_2O$ and Na_2CO_3. Writer the significance of $10H_2O$. Mention the term used for wate molecules attached with a slat. With the help of chemical equation explain the method of preparation of both $Na_2CO_3.10H_2O$ and Na_2CO_3. Also list two uses of $Na_2CO_3.10H_2O$.

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13. The crystals of a compound A on keeping in air get converted into a white powder. Its solution in water gives blue colour with red litmus. It is used to remove permanent hardness from water.

(a) Identify the substance. Write chemical formula for its crystalline from.

(b) Form the given information, identify the nature of the substance.

(c) Write two more uses of the substance.

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14. You are provided with magnesium ribbon and sulphur prowder. Explain with the help of an activity that metal oxides are basic and oxides of non-metals are acidic.

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15. (a) The blue colour of crystals of a substance changed on heating in a closed test tube but the colour was regained after sometime on cooling.

Name the substance and write irts chemical formula. Explain the phenomenon invilved.

(b) Write name and chemical formula of two such compounds whose one formula unit is associated with 10 and 2 water molecules respectively.

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16. Five solutions A,B,C,D and E when tested with universal indicator showed pH as 4,1,11,7 and 9, respectively. Which solution is

(a) neutral?

(b) strongly alkaline?

(c) strongly acidic?

(d) weakly acidic?

(e) weakly alkaline?

Arrange the pH in increasing order of hydrogen-ion concentration.

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17. (a) Define a universel indicator. Mention its one use.

(b) Solution A gives pink colour when a deop of phenolphthalein indicator is added to it. Solution B gives a red colour when a drop of methyl orange is added to it. What type or solution are A and B and which of these will have higher pH value ?

(c) Name one salt whose solution has pH less then 7 and one salt with pH more than 7.

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18. pH has a great importance in our daily life. Explain by giving three examples.

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19. What is tooth enamel chemically ? State the conditions when it starts corroding. What happens when food particles left in the mouth after

eating degrade ? Why do doctors suggest use of tooth power/tooth paste to prevent tooth decay ?

Watch Video Solution

20. Write the chemical name of $Na_2CO_3.10H_2O$ and Na_2CO_3. Writer the significance of $10H_2O$. Mention the term used for water molecules attached with a salt.. With the help of chemical equation explain the method of preparation of both $Na_2CO_3.10H_2O$ and Na_2CO_3. Also list two uses of $Na_2CO_3.10H_2O$.

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21. Five solutions A,B,C,D and E when tested with universal indicator showed pH as 4,1,11,7 and 9, respectively. Which solution is

(a) neutral?

(b) strongly alkaline?

(c) strongly acidic?

(d) weakly acidic?

(e) weakly alkaline?

Arrange the pH in increasing order of hydrogen-ion concentration.

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22. What will you observe when :

(i) Red litmus paper is introduced into a solution of sodium carbonate.

(ii) A methyl orange drop is added to dilute hydrochloric acid.

(iii) A drop of phenophthalein is added to the solution of lime water.

(iv) Blue litmus is introduced into a solution of ferric chlorede.

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23. (a). What is bleaching powder? How is bleaching powder prepared? Write chemical equation of the reaction involved in the preparation of bleaching powder.

(b) What happens when bleaching powder reacts with dilute sulphuric acid? Give equation of the reaction involved.

(c) State two important uses of bleaching powder.

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24. (a). What is plaster of paris? Write the chemical formula of plaster of paris.

(b) How is plaster of paris prepared? Write chemical equation of the reaction involved. (c) Explain why plaster of paris should be stored in a moisture-proof container.

(d) State two important uses of plaster of paris.

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Higher Order Thinking Skill Based Questions

1. Naman and Raghav perform an experiment in which they mix concentrated sulphuric acid with water. Naman mixes water with acid Raghav mixes acid with water slowly with constant stirring. Mention the suitable reason for selecting the one which you find is correct mehod and discarding the one which is wrong.

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2. A student working in the laboratory added some water to a syrupy liqiud taken in a tube. The tube immediately cracked and the liquid which escaped out of it, produced blisters on the skin of the student. What actually happened ?

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3. A person found that the cake prepared by him is hard and small in size. Which ingredient has he forgotten to add that would have caused to cake to rise and become light? Explain your answer.

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4. A substance X is a building material and is inosoluble in water. When reactd with dilute HCl, it produces a gas which turns lime water milky, Predict the substance. Write the chemical equations involved.

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5. Dry pellets of base 'X' when kept in open absorb moisture and turn sticky. The compound is also formed by chlor-alkali process. Write chemical name and formula of X. Describe chlor-alkali process with balanced chemical equation. Name the type of reaction that occures when X is treated with dilute hydrochloric acid. Write the chemical equation. While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid ?

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6. What will you observe when :

(i) Red litmus paper is introduced into a solution of sodium carbonate.

(ii) A methyl orange drop is added to dilute hydrochloric acid.

(iii) A drop of phenophthalein is added to the solution of lime water.

(iv) Blue litmus is introduced into a solution of ferric chlorede.

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Test Your Knowledge

1. A few drops of sulphuric acid are added to water before electrolysis. Why ?

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2. What is the difference between slaked lime and lime water ?

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3. Write the chemical equation to represent the neutralisation reaction between an acid and a base.

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4. Write the chemical equation by the action of atmospheric CO_2 gas on bleaching powder when left exposed in open.

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5. Chemical Properties Of Acids And Bases

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6. Explain why sodium hydroxide solution cannot be kept in aluminium containers ? Write equation for the reaction that may take place for the same.

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7. Write name and chemical formula of two such compounds whose one formula unit is associated with 10 and 2 water molecules respectively.

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8. Write chemical equation for the reaction of zinc metal on sodium hydroxide.

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9. What is the action of litums on (i) dry ammonia gas (ii) solution of ammonia gas in water ?

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10. State the observations you would make on adding sodium hydroxide to aqueous solution of

(i) ferrous sulphate (ii) aluminium chloride.

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11. Name one natural source of each of the followign acids.

(a). Citric acid

(b). Oxalic acid

(c). Lactic acid

(d). Tataric acid.

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12. Which ion is commonly produced by all acids ?

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13. (a) Define a universal indicator. Mention its one use.

(b) Solution A gives pink colour when a drop of phenolphthalein indicator is added to it. Solution B gives a red colour when a drop of methyl orange is added to it. What type or solution are A and B and which of these will have higher pH value ?

(c) Name one salt whose solution has pH less then 7 and one salt with pH more than 7.

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14. Give one example each of a salt which gives an aqueous solution having:

(a). pH less than 7

(b) pH equal to 7 . (c) pH more than 7.

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15. What is the chemical formula of soda ash and baking soda ?

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16. What is the role of tartaric acid in baking powder ?

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17. State two uses of washing soda.

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18. Write the names, formulae and colour of two hydrated salts.

Watch Video Solution

19. The pH of two solutions are 4 and 11 respectively. Indicate their nature.

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Multiple Choice Questions

1. What happens when a solution of an acid is mixed with a solution of a base in a test tube ?

(i) The temperature of the solution increases

(ii) The temperature of the solution decreases

(iii) The temperature of the solution remains the same

(iv) Salt formation takes place

A. (i) only

B. (i) and (ii)

C. (ii) and (iii)

D. (i) and (iv)

Answer: D

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2. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solutions would revers the change ?

A. Baking powder

B. Lime

C. Ammonium hydroxide solution

D. Hydrochloric acid

Answer: D

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3. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing anhydrous calcium chloride. The role of anhydrous calcium chloride taken in the guard tube is to

A. absorb the evolved gas

B. moisten the gas

C. absorb moisture from the gas

D. absorb Cl^- ions from the evolved gas

Answer: C

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4. Which of the following salts does not contain any water of crystallisation ?

A. Blue vitriol

B. Baking soda

C. Washing soda

D. Gypsum

Answer: B

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5. Sodium carbonate is basic salt because it is a salt of

A. strong acids and strong base

B. weak acid and weak base

C. strong acid and weak base

D. weak acid and strong base

Answer: B

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6. Calcium phosphate is present in tooth enamel. Its nature is

A. basic

B. acidic

C. neutral

D. amphoteric

Answer: A

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7. A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue ?

A. Lemon juice

B. Vinegar

C. Common salt

D. An antacid

Answer: D

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8. Which of the following gives the correct increasing order of acidic strength ?

A. Water $<$ Acetic acid $<$ hydrochloric acid

B. Water $<$ Acetic acid $<$ Acetic acid

C. Acetic acid $<$ Water $<$ Hydrochloric acid

D. hydrochloric acid $<$ Water $<$ Acetic acid

Answer: A

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9. If a few drops of a concentrated acid accidentally spill over the hand of a student, what should be done?

A. Wash the hand with saline solution

B. Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate

C. After washing hand with plenty of water, apply solution of sodium hydroxide on the hand

D. Neutralise the acid with a strong alkali

Answer: B

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10. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved ?

(i) It turns lime water milky

(ii) It extinguishes a burning splinter

(iii) It dissolves in a solution of sodium hydroxide

(iv) It has a pungent odour.

A. (i) and (ii)

B. (i), (ii) and (iii)

C. (ii, (iii) and (iv)

D. (i) and (iv)

Answer: B

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11. Common salt besides being used in kitchen can also be used as the raw meterial for making (i)washing soda (ii)bleaching powder (iii)baking soda (iv)slake

A. (i) and (ii)

B. (i), (ii) and (iv)

C. (i) and (iii)

D. (i) ,(iii) and (iv)

Answer: C

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12. One of the constituents of baking powder is sodium hydrogen carbonate. The other constituent is :

A. hydrochloric acid

B. tartaric acid

C. acetic acid

D. sulphuric acid

Answer: B

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13. To protect tooth decay, we are advised to brush out teeth regularly. The nature of the tooth paste commonly used is

A. acidic

B. neutral

C. basic

D. corrosive

Answer: C

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14. Which of the following statements is correct about an aqueous solution of an acid and of a base ?

(i) Higher the pH, stronger the acid

(ii) Higher the pH, weaker the acid

(iii) lower the pH, stronger the base

(iv) Lower the pH, weaker the base

A. (i) and (iii)

B. (ii) and (iii)

C. (i) and (iv)

D. (ii) and (iv)

Answer: D

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15. The pH of the gastric juices released during digestion is

A. less than 7

B. more then 7

C. equal to 7

D. equal to 0

Answer: A

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16. Which of the following phenomena occur when a small amount of acid is added to water ?

(i) Ionisation

(ii) neutralisation

(iii) Dilution

(iv) Salt formation

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. (ii) and (iv)

Answer: B

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17. Which one of the following can be used as an acid base indicator by a visually impared student ?

A. Litmus

B. Turmeric

C. Vanilla essence

D. Petunia leaves

Answer: C

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18. Which of the following substances will not give carbon dioxide on treatment with dilute acid ?

A. Marble

B. Lime stone

C. Baking soda

D. Lime

Answer: D

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19. Which of the following is acidic in nature ?

A. Lime juice

B. human blood

C. Lime water

D. Antacid

Answer: A

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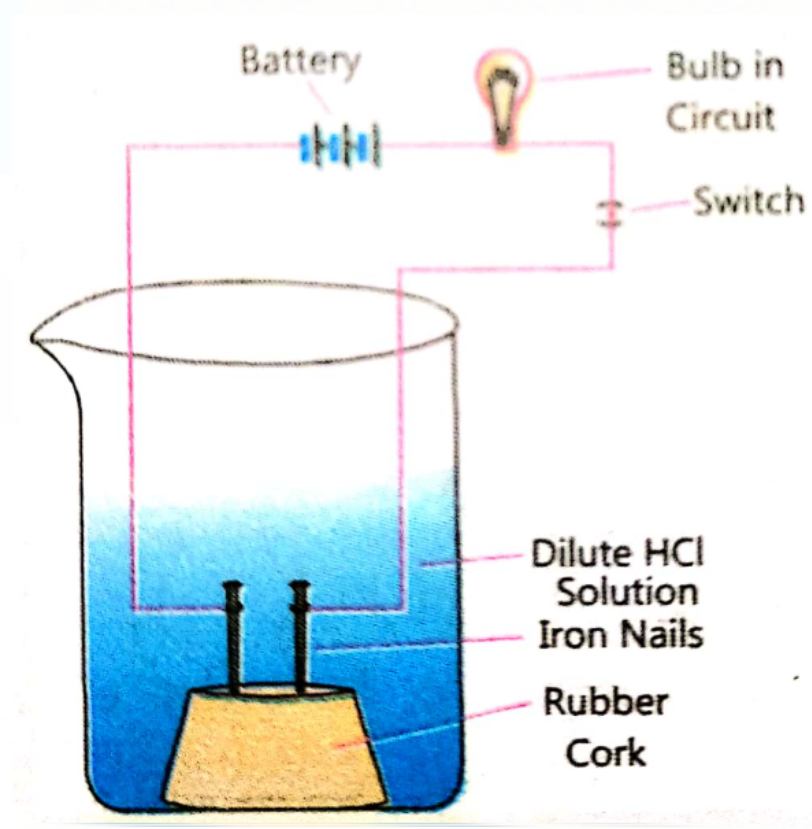
20. In an attempt to demonstrate electrical conductivity through an electrolyte, the apparatus set up is given. Which among the following statement (s) is (are) correct ?



(i) Bulb will not glow because electrolyte is not acidic

(ii) Bulb will glow because HCl is strong acid and furnishes ions for conduction.

(iii) Bulb will not glow because circuit is incomplete

(iv) Bulb will not glow because it depends upon the type of electrolytic solution

A. (i) and (iii)

B. (ii) and (iv)

C. (ii) only

D. (iv) only

Answer: C

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21. Which of the following is used for dissolution of gold ?

A. Hydrochloric acid

B. Sulphuric acid

C. Nitric acid

D. Aqua regia.

Answer: D

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22. Which of the following is not a mineral acid?

A. hydrochloric acid

B. Citric acid

C. Sulphuric acid

D. Nitric acid

Answer: B

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23. Which of the following is not base ?

A. NaOH

B. KOH

C. NH_4OH

D. $C_2H_5OH.$

Answer: D

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24. Which of the following statements is not correct ?

A. All metal carbonates react with acid to give a salt, water and carbon dioxide

B. All metal oxides react with water to give salt and acid

C. Some metals react with acids to give salt and hydrogen

D. Some non metal oxides react with water to form an acid

Answer: B

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25. Match the chemical substances given in column I with their appropriate application given in column II

	Column I		Column II
A.	Bleaching powder	1.	Preparation of glass
B.	Baking soda	2.	Production of H_2 and Cl_2
C.	Washing soda	3.	Decolourisation
D.	Sodium chloride	4.	Antacid

A. $1-(ii), 2-(i), 3-(iv), 4-(iii)$

B. $1-(iii), 2-(ii), 3-(iv), 4-(i)$

C. $1-(iii), 2-(iv), 3-(i), 4-(ii)$

D. $1-(ii), 2-(iv), 3-(i), 4-(iii)$

Answer: C

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26. Equal volumes of hydrochloric acid and sodium hydroxide solutions of same concentration are mixed and the pH of the resulting solution is checked with a pH paper . What would be the colour obtained ? (you may use color guide given in figure of NCERT Book(science class x) on page 26)

A. Red

B. Yellow

C. Green

D. Blue

Answer: C

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27. Which of the following is /are true when HCl (g) is passed through water?

(i) It does not ionise in the solution as it is a covalent compound .

(ii) It ionises in the solution.

(iii) It gives both hydrogen and hydroxyl ion in the solution

(iv) It forms hydronium ion in the solution due to the combination of hydrogen ion with water molecule.

A. (i) only

B. (iii) only

C. (ii) and (iv)

D. (iii) and (iv)

Answer: C

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28. Which of the following statement is true for acids?

A. Bitter and change red litmus to blue

B. Sour and change red litmus to blue

C. Sour change blue litmus to red

D. Bitter and change blue litmus to red

Answer: C

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29. Which of the following are present in a dilute aqueous solution of hydrochloric acid?

A. $H_3O^+ + Cl^-$

B. $H_3O^+ + OH^-$

C. $Cl^- + OH^-$

D. unionised HCl

Answer: A

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30. Identify the correct representation of reaction occurring during chloralkali process.

A. $2NaCl(l) + 2H_2O(l) \rightarrow 2NaOH(s) + Cl_2(g) + H_2(g)$

B. $2NaCl(aq) + 2H_2O(aq) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(aq)$

C. $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(aq) + H_2(g)$

D. $2NaCl(aq) + 2H_2O(l) \rightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$

Answer: D

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Saqs Short Answer Questions

1. Match the acids given in column (A) with their correct sources given in column (B)

	Column (A)		Column (B)
(a)	Lactic acid	(i)	Tamarind
(b)	Acetic acid	(ii)	Lemon
(c)	Citric acid	(iii)	Vinegar
(d)	Tartaric acid	(iv)	Cuad

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2. Match the important chemicals given in Column (A) with the chemical formulae given in Column (B)

	Column (A)		Column (B)
(a)	Plaster of Paris	(i)	$Ca(OH)_2$
(b)	Gypsum	(ii)	$CaSO_4.1/2H_2O$
(c)	Bleaching Powder	(iii)	$CaSO_4.2H_2O$
(d)	Lim $ewaater$	(iv)	$CaOCl_2$

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3. What will be the action of the following substances on litmus paper? Dery HCL gas moistened NH_3 gas, lemon juice , carbvonated soft dring, curd, soap solution.

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4. Name the acid presnet in ant sting and give its chemical formula . Also give the common method to get relief from the dioscomformt caused by the ant sting.

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5. What happens when nitric acid is added to egg shell ?

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6. A student prepared solution sof (i) an acid and (ii) a base in tow separate beakers. She forgot to label the soltuion s and litmus paper is not avialable in the laboratory. Since both the solutuons are colourless how will she distinguish between the two ?

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7. How would yuou distinguish between baking powder and washing soda by heating ?

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8. Salt A commonly used in bakery products on heatein gets converted in to another salt B which itself is used for removal of hardness of water and a gas c is evolved . The gas c when passsed thourgh lime water turns it milky. Identify A,B and C.

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9. In one of the industrial processes for manufacture of sodium hydroxide a gas x is formed as by product .Thje gas x reacts ith lime water to give a compuind y wghich used as a bleachjing agent in chemical induatry. Identify x and y giving the chemical equyation of the reactions involved

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10. Fill in the missing data in the following table.

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11. What are strong and weak acids? In the following list of acids separate strong acids from weak acids . Hydrochloric acid, citric acid , acetic acid, nitric acid formic acid , suphuric acid.

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12. When zinc metal is treated with a dilute solution of a strong acid, a gas is evolved which is utilised in the hydrogenation of lil. Name the gas evolved . Wirte the chemical equation of the reaction involved and also worte a test to detech the gas formed.

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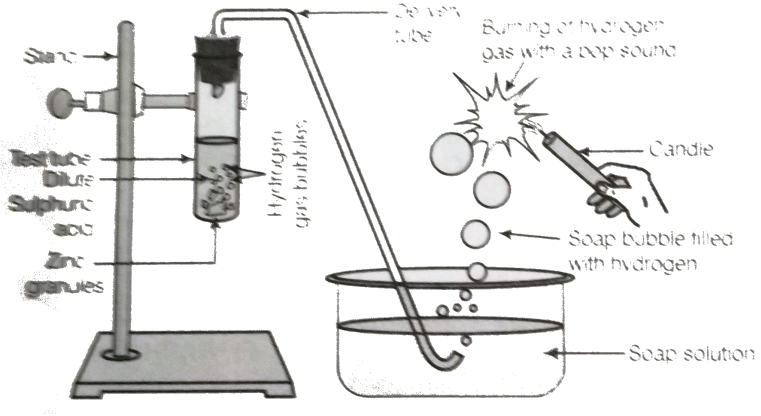
Laqs Long Answer Questions

1. In the following schematic diagram form the preapratinn of hydrogen gas as shown in the figure what would happen if the following chnges are made? ltbvrgt



(a) In plae of zinc granules , same amount of zinc dust is taken in the test tube

(b) Instead of dilute suplhuric acid , dilute hydrochloric acid is taken.

(c) In place of zinc, copper turnings are taken

(d) Sodium hydroxide is taken in place of dilute suphuric acid and the tube is heated.

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2. For making cake, baking p[owder is taken . If at home your mother uses baking soda instead of baking powder in cake.

(a) Hpow will it affect the taste oif the cake and why?

(b) How can baking soda be converted in to baking powder ?

(c) What is the role of tartaric acid added to baking soda?

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3. A metal cabonate X on rectin g with an acid agives a gas which when passsed through a solution Y gives the carbonate back. On the other hand, a gas G that is obtained at anode udring electrolysis of brine is passsed on dry y, it gives a compound Z, used for disinfecting drinking water . Identify X,Y,G and Z.

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4. A dry pellet of a common base B, When kept in open absorbs moisture and turns sticky. The compund is also a by poroduct of chlor alkali

process . Identify B, what type of reaction occurs when B is treated with an acidic oxide? Write a blanced chemical eqution for one such solution

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5. A suphlate slat of goup 2 elemne t of the periodic tables is a swhite soft substance which can be moluded in to different shapes by making its dough. When this compound is left in open for some time, it becomes a solid masss and cannot be used for moudling purposes . Identify the suphates salt and why does it show such a behavuiour ? Gove the reaction involved .

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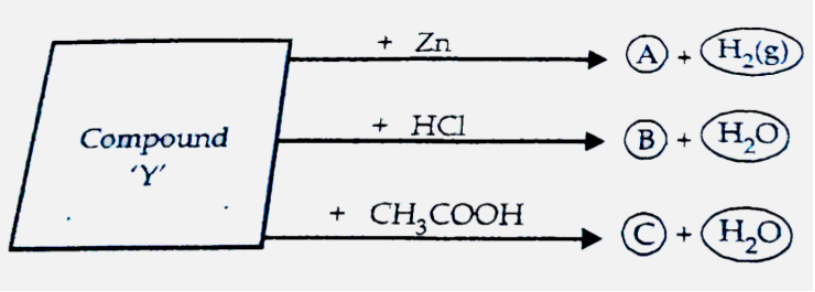
6. Identify the commpound 'Y' on the basis of the reactin given below. Also write the name and chemical formulae of A, B and C.



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