

ASSIGNMENT QUESTIONS SET – 2
CHAPTER – 2
ACIDS, BASES AND SALTS

1. The colour of neutral litmus solution is
a) red (b) blue (c) purple (d) yellow
2. Which of the following indicators is an olfactory indicator?
(a) litmus (b) vanilla (c) turmeric (d) phenolphthalein
3. Which one is suitable method to find the accurate pH value?
(a) pH meter (b) pH paper (c) Universal indicator (d) Litmus solution
4. Which one of the following statements is correct about universal indicator?
(a) It is a mixture of HCl and NaOH
(b) It is a mixture of many indicators
(c) It is a solution of phenolphthalein in alcohol
(d) It is a solution of phenolphthalein in water.
5. Which of the following properties are shown by dilute HCl?
(1) It turns blue litmus red
(2) It turns red litmus blue
(3) It reacts with zinc and a gas is evolved
(4) It reacts with solid sodium carbonate to give brisk effervescence
(a) 1 and 2 (b) 1 and 3 (c) 1, 3 and 4 (d) 2, 3 and 4
6. A teacher gave two test tubes – one containing water and the other containing sodium hydroxide solution to two students. Then he asked them to identify the test tube containing sodium hydroxide solution. Which one of the following can be used for correctly identifying the test tube containing the solution of sodium hydroxide?
(a) Blue litmus (b) Red litmus (c) Sodium carbonate solution (d) Dilute HCl
7. Metallic oxides are _____ in nature, but non-metallic oxides are _____ in nature. The information in which alternative completes the given statement?
(a) neutral, acidic (b) acidic, basic (c) basic, neutral (d) basic, acidic
8. When a drop of unknown solution X is placed on a strip of pH paper, a deep red colour is produced. This sample is which one of these?
(a) NaOH (b) HCl (c) Water (d) CH₃COOH
9. A student tests a sample drinking water and reports its pH value as 6 at room temperature. Which one of the following might have been added in water?
(a) Calcium chloride (b) Sodium chloride (c) Sodium bicarbonate (d) Bleaching powder
10. Solid sodium bicarbonate was placed on a strip of pH paper. The color of the strip
(a) turned red (b) did not change (c) turned green and slightly yellow (d) turned pink
11. Four drops of red litmus solution were added to each of the following samples. Which one turns red litmus blue?
(a) Alcohol (b) Distilled water (c) Sodium hydroxide sol (d) HCl

12. The pH of which of the following samples can not be found directly using pH paper?
(a) Lemon juice (b) Dilute HCl (c) Solid sodium bicarbonate (d) Solution of a detergent.
13. Which of the following natural sources contains oxalic acid?
(a) lemon (b) orange (c) tomato (d) tamarind
14. The acid found in an ant sting is
(a) acetic acid (b) citric acid (c) tartaric acid (d) methanoic acid
15. To relieve pain caused due to acidity, we can take
(a) sour milk (b) lemon juice (c) orange juice (d) milk of magnesia
16. What are the products obtained when potassium sulphate reacts with barium iodide in an aqueous medium?
(a) KI and BaSO₄ (b) KI, Ba and SO₂ (c) K, I₂ and BaSO₄ (d) K, Ba, I₂ and SO₂
17. Which of the following salts is basic in nature?
(a) NH₄NO₃ (b) Na₂CO₃ (c) Na₂SO₄ (d) NaCl
18. Which of the following salts has the minimum pH value?
(a) (NH₄)₂SO₄ (b) NaHCO₃ (c) K₂SO₄ (d) NaCl
19. You are given four unknown solutions I, II, III, and IV. The pH values of these solutions are found to be 3, 7, 8, and 10 respectively. Among the given solutions, which solution has the highest hydrogen ion concentration?
(a) I (b) II (c) III (d) IV
20. Which one of the following is required to identify the gas evolved when dilute hydrochloric acid reacts with zinc metal?
(a) blue litmus paper (b) red litmus paper (c) a burning splinter (d) lime water
21. Zinc reacts with an acid as well as with a base to liberate hydrogen. On the basis of this what should be the nature of the zinc metal?
(a) basic (b) acidic (c) amphoteric (d) neutral
22. When you test the solutions of sodium bicarbonate, sodium hydroxide, hydrochloric acid and acetic acid with universal indicator, in which case would you get a red colour?
(a) sodium bicarbonate (b) hydrochloric acid (c) sodium hydroxide (d) acetic acid
23. The pH of a sample of pure water is 7 at room temperature. What is its pH when a pinch of solid sodium bicarbonate is dissolved in it?
(a) vary near to 7 (b) less than 7 (c) more than 7 (d) exactly 7
24. If an unknown solution turns blue litmus red, then the pH of the solution is more likely to be (a) 12 (b) 10 (c) 7 (d) 4
25. What is the pH of a 0.00001 molar HCl solution?
(a) 1 (b) 9 (c) 5 (d) 4
26. There are alternate acid base theories that define an acid as any species that can
{hint: According to Bronsted-Lowry theory, an acid is any species that can donate a proton to another species.}
(a) donate a proton (2) donate an electron (c) accept a proton (d) accept an electron

27. 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 (iii)
(c) (ii) and (iii) (d) (i) and (iv)
28. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
- (a) Baking powder
 - (b) Lime
 - (c) Ammonium hydroxide solution
 - (d) Hydrochloric acid
29. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of 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
30. Compounds such as alcohols and glucose contain hydrogen but are not categorized as acids. Describe an activity to prove it.
31. Why does distilled water not conduct electricity, whereas rain water does?
32. Why do acids not show acidic behavior in the absence of water?
33. 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.
34. What is a neutralization reaction? Give two examples.
35. What happens when an acid or base is mixed with water?
36. Equal lengths of magnesium ribbons are taken in test tubes A and B. Hydrochloric acid is added to test tube A, while acetic acid is added to test tube B. The concentrations taken for both the acids are same in which test tube the reaction occur more vigorously and why?
37. Fresh milk has a pH of 6. How does the pH change as it turns to curd? Explain your answer.
38. 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?
39. Why does tooth decay start when the pH of mouth is lower than 5.5?

40. How does the flow of acid rain water into a river make the survival of aquatic life in a river difficult?
41. Dry hydrogen chloride gas does not turn blue litmus whereas hydrochloric acid does. Why?
42. What is meant by “water of crystallization” of a substance? Describe an activity to demonstrate water of crystallization.
43. Plaster of paris should be stored in a moisture – proof container. Explain why?
44. What is baking powder? How does it make the cake soft and spongy?
45. Give two important uses of washing soda and baking soda.
46. WHO AM I?
- I can roughly measure pH value from 0-14.
 - I am called antichlor and am used to remove excess chlorine from clothes when treated with bleaching powder.
 - I am a product of gypsum and am used to making chalks and fire proof materials.
 - I am a compound of calcium and can be used for disinfecting drinking water as well as for decolourisation.
 - I give different smell in acid and base solution.
 - I am an oxide capable of showing properties for both acids and bases.
 - I am a covalent compound and conducts electricity in aqueous medium.
 - I am a salt of potassium hydroxide and nitric acid.
 - I am the term used when a solid becomes liquid when exposed to moist air.
 - I am derived from tomato and turn blue litmus into red.
47. The colour of methyl orange indicator in acidic medium is: ()
a) Yellow b) green c) orange d) red
48. The colour of phenolphthalein indicator in basic solution is: ()
a) Yellow b) green c) pink d) orange
49. What is the colour methyl orange in alkaline medium? ()
a) orange b) yellow c) red d) blue
50. A solution turns red litmus blue, its pH will be: ()
a) 1 b) 4 c) 5 d) 10
51. A solution reacts with crushed egg-shells to give a gas that turns lime-water Milky, the solution contains: ()
a) NaCl b) HCl c) LiCl d) KCl
52. Why is universal indicator a better one than litmus paper? ()
a) Litmus paper can only be used for acids.
b) Litmus paper can only be used for alkalis.
c) Universal indicator goes green if something is neutral.
d) Universal indicator is useful for all ranges of pH of the solution.
53. Water soluble bases are known as? ()
a) neutral b) base c) acid d) alkali

54. Which of one of the following pairs of substances when mixed together produces table salt.

()

- a) Sodium thiosulphate and sulphur dioxide
- b) Hydrochloric acid and sodium hydroxide
- c) Chlorine and oxygen
- d) Nitric acid and sodium hydrogen carbonate

55. What colour would hydrochloric acid (pH=1) turn universal indicator. ()

- a) Orange b) purple c) yellow d) red

56. Which one of the following medicines is used for treating indigestion. ()

- a) Antibiotic b) analgesic c) antacid d) antiseptic

57. If magnesium reacts with hydrochloric acid, what gas is produced? ()

- a) Hydrogen b) oxygen c) carbon dioxide d) chlorine

58. Which of the following is the most accurate way of representing neutralization? ()

- a) Acid + base → neutral solution
- b) Acid + base → salt + water
- c) Acid + base → sodium chloride + hydrogen
- d) Acid + base → acidic solution

59. Classify the following examples as acid, base or salt:

Mg (OH) ₂	_____	KCl	_____	HCl	_____
H ₃ PO ₄	_____	HBr	_____	Al (OH) ₃	_____
KNO ₂	_____	NaCl	_____		
Ba (OH) ₂	_____	HFO ₄	_____		

60. Fill in the following blanks:

- A _____ taste is a characteristic property of all acids in aqueous solution.
- Acids react with some metals to produce _____ gas
- Aqueous acid solutions conduct electricity because they have _____
- Acid reacts with base to produce a _____ and water.
- Acid turn methyl orange to _____ colour.
- Bases tend to taste _____ and feel _____
- Aqueous basic solutions conduct electricity because they have _____.
- Bases react with _____ to produce a salt and _____
- Bases turn phenolphthalein to _____ colour.

61. Match the following:

- | | | | |
|---------------------|-----|---|-----------------|
| a) Plaster of Paris | () | 1) CaO | Cl ₂ |
| b) Gypsum | () | 2) NaHCO ₃ | |
| c) Bleaching powder | () | 3) Na ₂ CO ₃ | |
| d) Baking soda | () | 4) CaSO ₄ · ½ H ₂ O | |
| e) Washing soda | () | 5) CaSO ₄ · 2 H ₂ O | |

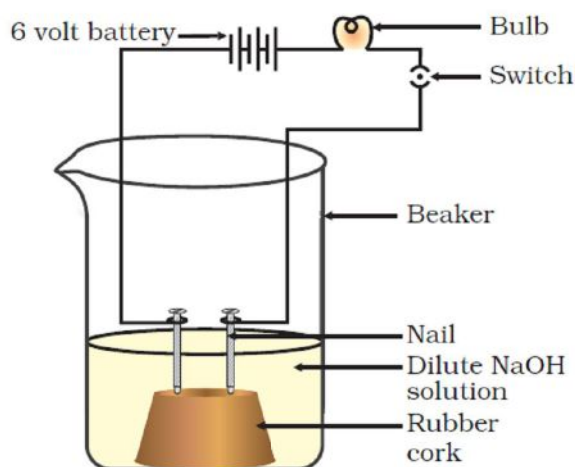
62. Which of the following salts does not contain water of crystallisation?

- (a) Blue vitriol
- (b) Baking soda
- (c) Washing soda
- (d) Gypsum

63. Sodium carbonate is a basic salt because it is a salt of
(a) strong acid and strong base
(b) weak acid and weak base
(c) strong acid and weak base
(d) weak acid and strong base
64. Calcium phosphate is present in tooth enamel. Its nature is
(a) basic (b) acidic (c) neutral (d) amphoteric
65. 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
66. Which of the following gives the correct increasing order of acidic strength?
(a) Water < Acetic acid < Hydrochloric acid
(b) Water < Hydrochloric acid < Acetic acid
(c) Acetic acid < Water < Hydrochloric acid
(d) Hydrochloric acid < Water < Acetic acid
67. If a few drops of a concentrated acid accidentally spills 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 hydrogencarbonate
(c) After washing with plenty of water apply solution of sodium hydroxide on the hand
(d) Neutralise the acid with a strong alkali
68. Sodium hydrogencarbonate 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)
69. Common salt besides being used in kitchen can also be used as the raw material for making
(i) washing soda
(ii) bleaching powder
(iii) baking soda
(iv) slaked lime
(a) (i) and (ii) (b) (i), (ii) and (iv)
(c) (i) and (iii) (d) (i), (iii) and (iv)
70. 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

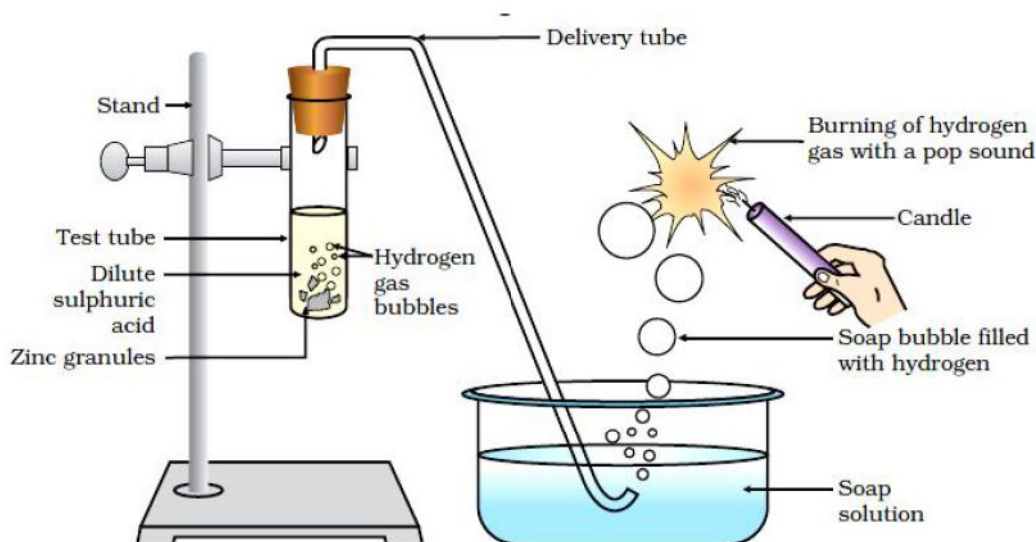
71. To protect tooth decay we are advised to brush our teeth regularly. The nature of the tooth paste commonly used is
- acidic
 - neutral
 - basic
 - corrosive
72. Which of the following statements is correct about an aqueous solution of an acid and of a base?
- Higher the pH, stronger the acid
 - Higher the pH, weaker the acid
 - Lower the pH, stronger the base
 - Lower the pH, weaker the base
- (a) (i) and (iii) (b) (ii) and (iii)
(c) (i) and (iv) (d) (ii) and (iv)
73. The pH of the gastric juices released during digestion is
- less than 7
 - more than 7
 - equal to 7
 - equal to 0
74. Which of the following phenomena occur, when a small amount of acid is added to water?
- Ionisation
 - Neutralisation
 - Dilution
 - Salt formation
- (a) (i) and (ii) (b) (i) and (iii)
(c) (ii) and (iii) (d) (ii) and (iv)
75. Which one of the following can be used as an acid–base indicator by a visually impaired student?
- Litmus
 - Turmeric
 - Vanilla essence
 - Petunia leaves
76. Which of the following substance will not give carbon dioxide on treatment with dilute acid?
- Marble
 - Limestone
 - Baking soda
 - Lime
77. Which of the following is acidic in nature?
- Lime juice
 - Human blood
 - Lime water
 - Antacid
78. In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus (see below Figure) was set up. Which among the following statement(s) is(are) correct?
- Bulb will not glow because electrolyte is not acidic

- (ii) Bulb will glow because NaOH is a strong base 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 (c) (iv) only



79. Which of the following is used for dissolution of gold?
- (a) Hydrochloric acid
 - (b) Sulphuric acid
 - (c) Nitric acid
 - (d) Aqua regia
80. Which of the following is not a mineral acid?
- (a) Hydrochloric acid
 - (b) Citric acid
 - (c) Sulphuric acid
 - (d) Nitric acid
81. Which among the following is not a base?
- (a) NaOH
 - (b) KOH
 - (c) NH_4OH
 - (d) $\text{C}_2\text{H}_5\text{OH}$
82. 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
83. 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)

84. Which of the following statements is true for acids?
- Bitter and change red litmus to blue
 - Sour and change red litmus to blue
 - Sour and change blue litmus to red
 - Bitter and change blue litmus to red
85. Which of the following are present in a dilute aqueous solution of hydrochloric acid?
- $\text{H}_3\text{O}^+ + \text{Cl}^-$
 - $\text{H}_3\text{O}^+ + \text{OH}^-$
 - $\text{Cl}^- + \text{OH}^-$
 - unionised HCl
86. Identify the correct representation of reaction occurring during chloralkali process
- $2\text{NaCl}(\text{l}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{l}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$
 - $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{aq}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$
 - $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{aq}) + \text{H}_2(\text{aq})$
 - $2\text{NaCl}(\text{aq}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{NaOH}(\text{aq}) + \text{Cl}_2(\text{g}) + \text{H}_2(\text{g})$
87. What will be the action of the following substances on litmus paper? Dry HCl gas, Moistened NH_3 gas, Lemon juice, Carbonated soft drink, Curd, Soap solution.
88. Name the acid present in ant sting and give its chemical formula. Also give the common method to get relief from the discomfort caused by the ant sting.
89. A student prepared solutions of (i) an acid and (ii) a base in two separate beakers. She forgot to label the solutions and litmus paper is not available in the laboratory. Since both the solutions are colourless, how will she distinguish between the two?
90. How would you distinguish between baking powder and washing soda by heating?
91. Salt - A commonly used in bakery products on heating gets converted into another salt B which itself is used for removal of hardness of water and a gas C is evolved. The gas C when passed through lime water, turns it milky. Identify A, B and C.
92. In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by product. The gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equation of the reactions involved.
93. 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, sulphuric acid.
94. When zinc metal is treated with a dilute solution of a strong acid, a gas is evolved, which is utilised in the hydrogenation of oil. Name the gas evolved. Write the chemical equation of the reaction involved and also write a test to detect the gas formed.
95. In the following schematic diagram for the preparation of hydrogen gas as shown in below Figure, what would happen if following changes are made?



- (a) In place of zinc granules, same amount of zinc dust is taken in the test tube
 (b) Instead of dilute sulphuric acid, dilute hydrochloric acid is taken
 (c) In place of zinc, copper turnings are taken
 (d) Sodium hydroxide is taken in place of dilute sulphuric acid and the tube is heated.

96. For making cake, baking powder is taken. If at home your mother uses baking soda instead of baking powder in cake,

- (a) how will it affect the taste of the cake and why?
 (b) how can baking soda be converted into baking powder?
 (c) what is the role of tartaric acid added to baking soda?

97. A metal carbonate X on reacting with an acid gives a gas which when passed through a solution Y gives the carbonate back. On the other hand, a gas G that is obtained at anode during electrolysis of brine is passed on dry Y, it gives a compound Z, used for disinfecting drinking water. Identify X, Y, G and Z.

98. A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product of chloralkali process. Identify B. What type of reaction occurs when B is treated with an acidic oxide? Write a balanced chemical equation for one such solution.

99. A sulphate salt of Group 2 element of the Periodic Table is a white, soft substance, which can be moulded into different shapes by making its dough. When this compound is left in open for some time, it becomes a solid mass and cannot be used for moulding purposes. Identify the sulphate salt and why does it show such a behaviour? Give the reaction involved.

100. Identify the compound X on the basis of the reactions given below. Also, write the name and chemical formulae of A, B and C.

