	INDIAN SCHOOL AL WADI AL KABIR	

Class: X	**Department: SCIENCE 2022 – 23** **SUBJECT: CHEMISTRY**	**Date of completion: 15-8-22**
Worksheet No: 02 **WITH ANSWERS**	**CHAPTER: ACIDS, BASES AND SALTS**	**Note:** **A4 FILE FORMAT**
Name of the student:	**Class & Sec:**	**Roll No:**

OBJECTIVE TYPE QUESTIONS
MULTIPLE CHOICE QUESTIONS

1. Which one of the following can be used as an acid-base indicator by a visually impaired student?
   a. Litmus
   b. Turmeric
   c. Vanilla essence
   d. Petunia leaves
2. Phenolphthalein's colour in basic medium is ____but in acid it is _____.
   a. Pink, Colorless
   b. Yellow, Pink
   c. Pink, Orange
   d. Blue, Red
3. Bleaching powder's chemical name is _____
   a. Calcium hypo-Oxychloride
   b. Calcium Oxychloride
   c. Calcium Chloride
   d. Calcium Chloro-Oxide
4. 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

5. The salt which will give an acidic solution on dissolving in water is:-
   (a) KCl (b) NH_4Cl (c) Na_2CO_3 (d) CH_3COONa

6. The pH values of four solutions A, B, C and D are 6, 8, 10, 5 respectively. Arrange the solution in the increasing order of hydrogen ion concentration.
   (a) A, B, C, D (b) D, C, B, A (c) C, A, D, B (d) C, B, A, D

7. In terms of acidic strength, which one of the following is in the correct increasing order?

(a) Water < Acetic acid < Hydrochloric acid
(b) Water < Hydrochloric acid < Acetic acid
(c) Acetic acid < Water < Hydrochloric acid
(d) Hydrochloric acid < Water < Acetic acid

8. What is formed when zinc reacts with sodium hydroxide?
(a) Zinc hydroxide and sodium
(b) Sodium zincate and hydrogen gas
(c) Sodium zinc-oxide and hydrogen gas
(d) Sodium zincate and water
9. Brine is an
(a) aqueous solution of sodium hydroxide
(b) aqueous solution of sodium carbonate
(c) aqueous solution of sodium chloride
(d) aqueous solution of sodium bicarbonate
10. Sodium carbonate is a basic salt because it is a salt of a
(a) strong acid and strong base
(b) weak acid and weak base
(c) strong acid and weak base
(d) weak acid and strong base
11. Tooth enamel is made up of
(a) Calcium phosphate
(b) Calcium carbonate
(c) Calcium oxide
(d) Potassium
12. 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)
13. Chemical formula of washing soda is
(a) $Na_2CO_3 . 7H_2O$
(b) $Na_2CO_3 . 5H_2O$
(c) $Na_2CO_3 . 2H_2O$
(d) $Na_2CO_3 . 10H_2O$

Assertion and Reason Questions

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(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

14. Assertion (A) : The process of dissolving an acid or a base in water is a highly exothermic.
Reason (R) : Mixing an acid or base with water results in decrease in concentration of ions (H_3O^+ / H^+)

15. Assertion (A) **:** During electrolysis of concentrated aqueous solution of sodium chloride, hydrogen is produced at anode and chlorine gas is produced at cathode.
Reason (R) **:** Ions get attracted to oppositely charged electrodes.

16. Assertion (A): Plaster of Paris is stored in a moisture proof container.
Reason (R) : Plaster of Paris sets into a hard mass on wetting with water to form anhydrous calcium sulphate.

17. Assertion : HCl is a stronger acid than acetic acid.
Reason: On dissociation, HCl yields lesser hydrogen ions for the same concentration as compared to acetic acid.

18. Assertion : pH of ammonium nitrate solution is acidic.
Reason: Solution of a salt of weak base and strong acid is acidic.

Case study based questions

Read the following and answer any four questions:

A compound, X of sodium forms a white powder .It is a constituent of baking powder and is used in some antacids. When heated it gives a compound, Y which is anhydrous and absorbs water to become a hydrated salt .When this salt is kept on open air , it loses water molecules in a process called efflorescence. When dissolved in water it forms a strong base and a weak acid , Z.

19. What is compound X?
(a) $NaHCO_3$ (b) Na_2CO_3 (c) NaOH (d) NaCl

20. Identify the compound, Z.
(a) CO_2 (b) H_2CO_3 (c) NaOH (d) H_2O

21. The compound, Y is
(a) $NaHCO_3$ (b) Na_2CO_3 (c) $Na_2CO_3 .10H_2O$ (d) NaCl

22. What is the nature of the solution formed by dissolving Y in water?
(a) Alkaline (b) Acidic (c) Neutral (d) It remains insoluble

23. Sodium carbonate is a basic compound because it is a salt of a

(a) Strong acid and strong base (b) weak acid and weak base

(c) Strong acid and weak base (d) weak acid and strong base

ONE MARK QUESTIONS

24. Name the gas evolved when dilute HCl reacts with sodium hydrogen carbonate.
25. What is the name of the indicator which can be used for testing the pH of a solution?
26. Two solutions X and Y have pH=4 and pH=8 respectively. Which solution will give alkaline reaction and which one acidic?

THREE MARK QUESTIONS

27. (a) Define olfactory indicators. Name two substances which can be used as olfactory indicators.
(b)Choose strong acids from the following:-
CH_3COOH, H_2SO_4, H_2CO_3, HNO_3

28. 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.
(i) Identify the most acidic and most basic solutions.
(ii) Arrange the above four solutions in the increasing order of H+ ion concentration.
(iii) State the change in colour of pH paper on dipping in solution C and D.

29. Equal length of magnesium ribbon are taken in two test tubes A and B .H_2SO_4 is added to test tube A and H_2CO_3 in the test tube B in equal amounts.
(a) Identify the test tube having vigorous reaction.
(b) Give reason to support your answer.
(c) Name the gas liberated in both the test tubes. How will you prove its liberation?
(d) Write chemical equations for both the reactions.

PREVIUOS YEAR BOARD QUESTIONS

30. A chemical compound X is used in the soap and glass industry. It is prepared from brine.
(a) Write the chemical name, common name and chemical formula of X.
(b) Write the equation involved in its preparation.
(c) What happens when it is treated with water containing Ca or Mg salts? (CBSE 2012)

31. Why do acids not show acidic behaviour in the absence of water? (CBSE 2018)

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

33. Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether its compound is acidic, basic or neutral. Also write its pH value.

34. Why should curd and sour substances not be kept in brass and copper vessels ? (CBSE 2015)

35. Compounds such as alcohol and glucose also contain hydrogen but are not categorised as acids. Describe an activity to prove it.

ANSWERS

OBJECTIVE TYPE QUESTIONS

MULTIPLE CHOICE QUESTIONS

1. (c) Vanilla essence
2. (b) Yellow, Pink
3. (b) calcium oxychloride
4. (b) HCl
5. (b) NH_4Cl
6. (d) C, B, A, D
7. (a) Water < Acetic acid < Hydrochloric acid
8. (b) Sodium zincate and hydrogen gas
9. (c) aqueous solution of sodium chloride

10. (d) weak acid and strong base
11. (a) calcium phosphate
12. (b) (i) and (iii)
13. (d) Na_2CO_3 . $10H_2O$

Assertion and Reason Questions

14. (b) Both A and R are true but R is not the correct explanation of A.
15. (d) A is false but R is true
16. (c) A is true but R is false.
17. (c) A is true but R is false.
18. (a) Both A and R are true and R is the correct explanation of A.

Case study based questions

19. (a) $NaHCO_3$
20. **(b):** Z is carbonic acid, a weak acid formed when Na_2CO_3 is dissolved in water.
21. (b)
22. (a) Alkaline

ONE MARK QUESTIONS

23. Carbon dioxide gas
24. Universal indicator.
25. Y will give alkaline and X will give acidic.

THREE MARK QUESTIONS

27. (a) Those substances whose smell changes in acidic or basic solution.
    Eg:- Onion and vanilla
    (b) H_2SO_4, HNO_3
28. (i) A is most acidic and C is most basic.
    (ii) C< B< D< A
    pH paper will become blue in C and green in D.

29. (a) A will show vigorous reaction.
    (b)It is because H_2SO_4 is a strong acid.

    (c) Hydrogen gas will be formed. Bring a burning splinter near the gas. It will burn with pop sound. It shows gas liberated is hydrogen.

    (d) $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$

    $Mg + H_2CO_3 \rightarrow MgCO_3 + H_2$

30. (a) Sodium carbonate, washing soda, $Na_2CO_3.10H_2O$
    (b)

$$NaCl + H_2O + CO_2 + NH_3 \rightarrow NH_4Cl + NaHCO_3$$

$$2NaHCO_3 \xrightarrow{Heat} Na_2CO_3 + H_2O + CO_2$$

$$Na_2CO_3 + 10H_2O \rightarrow Na_2CO_3.10H_2O$$

(c) .It removes permanent hardness of water (due to the presence of Ca and Mg salts)

31. It is because acids do not dissociate in to ions in absence of water. But when an acid is dissolved in water, it forms hydrogen ions and hence shows acidic behaviour.

32.Uses of washing soda:-

(i) Used in the manufacture of glass, soap, paper and other compounds like borax etc.

(ii)Used in softening of hard water.

Uses of baking soda:-

(i) Used as an antacid.

(ii)It is an ingredient of baking powder.

33. Sodium hydroxide (NaOH) is the base and hydrogen carbonate (H_2CO_3) is the acid which forms sodium hydrogen carbonate (NaHCO3).

$NaOH+H_2CO_3 \longrightarrow NaHCO_3+H_2O$

Sodium hydrogen carbonate is a weak base and its pH is 8.3.

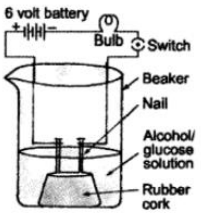
34. Hint:Curd and sour substances are acidic. Acids react with brass and metals –product of these reactions make the food unfit for consumption.

35. Though compounds like alcohol and glucose contain hydrogen but they do not ionise in the solution to produce H^+ ions on passing current through them.

(i) Take solutions of alcohols and glucose.

(ii) Fix two nails on a cork, and place the cork in 100 mL beaker.

(iii) Connect the nails to the two terminals of a 6 volt battery through a bulb and a switch, as shown in the given Figure.



(iv) Now pour alcohol in the beaker and switch on the current.

(v) The bulb does not glow.

(vi) Repeat the experiment with glucose. The bulb does not glow in this case also.

(vii) This means no ions or H+ ions are present in the solution.

This shows that alcohols and glucose are not acids.

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