

International Indian School Buraidah

Worksheet of the year 2026-27

Class – 10th Chemistry

Chapter # 2 Acids, Bases and Salts

Q-A Choose the correct options -

Question-1: What is the pH value of a neutral substance?

- a) 0
- b) 7
- c) 14
- d) 10

Answer: b) 7

Questions-2 Which of the following is a characteristic of acids? a)

Sour taste

- b) Bitter taste
- c) Slippery feel
- d) Blue litmus turns red

Answer: a) Sour taste

Questions-3 What happens when an acid reacts with a metal? a)

Formation of water and salt

- b) Release of hydrogen gas
- c) Production of oxygen gas
- d) Formation of carbon dioxide gas

Answer: b) Release of hydrogen gas

Questions-4 Which of the following is a strong acid?

- a) Acetic acid
- b) Citric acid
- c) Hydrochloric acid
- d) Carbonic acid

Answer: c) Hydrochloric acid

Questions-5 Which acid is present in lemon juice? a)

Sulfuric acid

- b) Nitric acid
- c) Acetic acid
- d) Citric acid

Answer: d) Citric acid

Questions-6 What is the common name for sodium hydroxide? a)

Baking soda

- b) Bleaching powder
- c) Washing soda
- d) Caustic soda

Answer: d) Caustic soda

Questions-7 Which of the following is a property of bases? a)

Turn red litmus blue

- b) Turn blue litmus red

- c) Taste sour
- d) React with metals to release hydrogen gas

Answer: a) Turn red litmus blue

Questions-8 Which of the following is a weak base?

- a) Sodium hydroxide
- b) Ammonium hydroxide
- c) Calcium hydroxide
- d) Potassium hydroxide

Answer: b) Ammonium hydroxide

Questions-9 What is the pH value of a strong acid?

- a) Less than 7
- b) Equal to 7
- c) Greater than 7
- d) Variable

Answer: a) Less than 7

Questions-10 Which of the following is an example of a salt? a)

Sugar

- b) Calcium carbonate
- c) Sodium chloride
- d) Hydrogen peroxide

Answer: c) Sodium chloride

Question-11 What type of reaction occurs when an acid reacts with a metal carbonate? a)

Acid-base reaction

- b) Oxidation-reduction reaction
- c) Decomposition reaction
- d) Neutralization reaction

Answer: d) Neutralization reaction

Question-12 What happens when an acid reacts with a metal oxide? a)

Salt and water are formed

- b) Salt and carbon dioxide are formed
- c) Salt and hydrogen gas are formed
- d) Salt and oxygen gas are formed

Answer: a) Salt and water are formed

Questions-13 Which of the following is not a characteristic of a base? a)

Sour taste

- b) Bitter taste
- c) Turn red litmus blue
- d) Slippery feel

Answer: a) Sour taste

Question-14 Which of the following is a natural indicator? a)

Phenolphthalein

- b) Methyl orange
- c) Litmus
- d) Bromothymol blue

Answer: c) Litmus

Questions-15 What happens when an acid is mixed with a base in equal proportions? a)

No reaction takes place

b) Formation of water and salt

c) Release of hydrogen gas

d) Formation of carbon dioxide gas

Answer: b) Formation of water and salt

Questions-16 Which acid is found in vinegar? a)

Sulfuric acid

b) Nitric acid

c) Acetic acid

d) Hydrochloric acid

Answer: c) Acetic acid

Questions-17 What is the pH value of a strong base?

a) Less than 7

b) Equal to 7

c) Greater than 7

d) Variable

Answer: c) Greater than 7

Questions-18 What is the pH value of lemon juice?

a) 1

b) 7

c) 14

d) 5

Answer: d) 5

Question-19 Which of the following is a weak acid?

a) Hydrochloric acid

b) Sulfuric acid

c) Nitric acid

d) Carbonic acid

Answer: d) Carbonic acid

Questions-20 What happens when an acid reacts with a metal hydroxide? a)

Formation of water and salt

b) Release of hydrogen gas

c) Production of oxygen gas

d) Formation of carbon dioxide gas

Answer: a) Formation of water and salt

Questions-21 What type of reaction occurs when an acid reacts with a metal? a)

Acid-base reaction

b) Oxidation-reduction reaction

c) Decomposition reaction

d) Neutralization reaction

Answer: b) Oxidation-reduction reaction

Question-22 What happens when an acid reacts with a metal sulfide? a)

Salt and water are formed

b) Salt and carbon dioxide are formed

c) Salt and hydrogen gas are formed

d) Salt and oxygen gas are formed

Answer: c) Salt and hydrogen gas are formed

Question-23 What happens when an acid reacts with a metal bicarbonate? a)

Formation of water and salt

b) Release of hydrogen gas

c) Production of oxygen gas

d) Formation of carbon dioxide gas

Answer: d) Formation of carbon dioxide gas

Questions-24 What type of reaction occurs when a base reacts with a non-metal oxide? a)

Acid-base reaction

b) Oxidation-reduction reaction

c) Decomposition reaction

d) Neutralization reaction

Answer: a) Acid-base reaction

Question-25 Which acid is used in lead storage batteries? a)

Sulfuric acid

b) Nitric acid

c) Hydrochloric acid

d) Acetic acid

Answer: a) Sulfuric acid

Q-2 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

Q.1. Assertion (A) : The acid must always be added to water with constant stirring.

Reason (R) : Mixing of an acid with water decreases the concentration of H^+ ions per unit volume.

Answer(b)

Q.2. Assertion (A) : Copper sulphate crystals are wet because it contains water of crystallisation.

Reason (R) : Water of crystallisation is the fixed number of molecules of water present in one formula unit of salt.

Answer(d) The Assertion is false. Copper sulphate is not wet. It is an hydrated salt, as it contains water molecules.

Q.3. Assertion (A) : The aqueous solutions of glucose and alcohol do not show acidic character. **Reason (R) :** Aqueous solutions of glucose and alcohol do not give H^+ ions.

Answer (a)

Q.4. Assertion (A) : HCl gas does not change the colour of dry blue litmus paper.
Reason (R) : HCl gas dissolves in the water present in wet litmus paper to form H^+ ions.
Answer (a)

Q.5. Assertion (A) : Weak acids have low electrical conductivity.
Reason (R) : Strong acids and weak acids have equal concentration of hydrogen ions in their solutions.
Answer – (c)

Q.6. Assertion (A): Pure water is neither acidic nor basic.
Reason (R) : The pH of a solution is inversely proportional to the concentration of hydrogen ions in it.
Answer (b)

Q.7. 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.
Answer(d)

Q.8. Assertion (A) : Baking powder is used in making cake instead of using only baking soda. **Reason (R) :** Baking powder contains tartaric acid which reacts with sodium carbonate and removes bitter taste.
Answer(a)

Q.9. Assertion (A) : The chemical formula of bleaching powder is $CaOCl_2$.
Reason (R) : Calcium oxide reacts with chlorine to form bleaching powder.
Answer(c)

Q.10. 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.
Answer(c)

Q.11. Assertion (A): The chemical name of bleaching powder is calcium oxychloride.

Reason (R): Bleaching powder is used as an oxidising agent in chemical industries.

Answer b

Q.12. Assertion: The process of dissolving an acid or a base in water is highly exothermic reaction.

Reason: Water must always be added slowly to acid with constant stirring.

Answer c

Q.13. Assertion : Phenolphthalein is an acid-base indicator.

Reason: Phenolphthalein gives different colours in acidic and basic medium.

Answer a

Q.14. Assertion: Calcium sulphate hemihydrate, $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$ is called plaster of Paris.

Reason: Plaster of Paris is used for producing moulds for pottery and ceramics and casts of statues.

Answer b

Q.15. Assertion : $\text{pH} = 7$ signifies pure water. **Reason:** pH of acetic acid is greater than 7.

Answer c

Q.16. 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.

Answer c

Q.17. Assertion : pH of ammonium nitrate solution is acidic.

Reason: Solution of a salt of weak base and strong acid is acidic.

Answer a

Q.18. Assertion : Phosphoric acid is a weak acid.

Reason : Phosphoric acid when dissolved in water dissociates partially and produces very little H^+ ions.

Answer a

Q.19. Assertion : Antacids neutralize the effect of extra acid produced in the stomach during indigestion and thus provide relief. **Reason:** Antacids are mild bases.

Answer a

Q.20. Assertion : Acetic acid does not act as an acid in benzene solution. **Reason:** Benzene is non-polar.

Answer a

Q.21. Assertion : Bleaching powder reacts with dilute acids to evolve chlorine.
Reason: The chlorine liberated by the action of dilute acids on bleaching powder is called available chlorine.

Answer b

Q.22. Assertion : Sodium carbonate pentahydrate is also known as washing soda.
Reason: Chief raw materials for the manufacture of washing soda are NH_3 , $NaCl$ and $CaCO_3$.

Answer d

Q.23. Assertion: Common salt is used for the preparation of many chemicals such as sodium hydroxide, bleaching powder, baking soda, washing soda etc. **Reason :** Main source of sodium chloride is sea water.

Answer b

Q.24. Assertion : $AlCl_3$ is a basic salt.
Reason: $AlCl_3$ is a salt of strong acid and a weak base.

Answer d

Q.25. Assertion : Baking soda is prepared by chlor-alkali process.
Reason: Brine decomposes to sodium hydroxide on passing electricity through it.

Answer d

Q.26. Assertion : Salt of KNO_3 is formed by strong base and weak acid. **Reason:** Salt of NH_4Cl is formed by weak base and strong acid.

Answer d

Q.27. Assertion : Strength of the acid or base decreases with dilution. **Reason:** Ionization of an acid or a base increases with dilution.

Answer b

Q.28. Assertion : Higher the H^+ ion concentration, lower is the pH value.
Reason: The pH of a neutral solution = 7, that of a basic solution < 7 and that of an acidic solution > 7 .

Answer c

Q.29. Assertion : CH_3COOH is used as vinegar in cooking and food preservatives.
Reason: Strong acids are those acids which ionise almost completely in aqueous solution and hence produce a large amount of H^+ ions.

Answer b

Q.30. Assertion : Tooth decay starts when the pH of the mouth is lower than 5.5.
Reason: Enamel starts corroding below 5.5 pH.

Answer a

Q-C Case Study Based Question- pH is quite useful to us in a number of ways in daily life. Some of its applications are:

Control of pH of the soil : Plants need a specific pH range for proper growth. The soil may be acidic, basic or neutral depending upon the relative concentration of H^+ and OH^- . The pH of any soil can be determined by using pH paper. If the soil is too acidic, it can be corrected by adding lime to it. If the soil is too basic, it can be corrected by adding organic manure which contains acidic materials.

Regaining shine of a tarnished copper vessel by use of acids : A copper vessel gets tarnished due to formation of an oxide layer on its surface. On rubbing lemon on the vessel, the surface is cleaned and the vessel begins to shine again. This is due to the fact that copper oxide is basic in nature, which reacts with the acid (citric acid) present in lemon to form a salt (copper citrate) which is washed away with water. As a result, the layer of copper oxide is removed from the surface of the vessel and the shining surface is exposed.

Self-defence by animals through chemical warfare : Stings of bees and ants contain methanoic acid. When stung, it causes lot of pain and irritation. This can be cured by rubbing the affected area with mild base like baking soda.

(i) When black copper oxide placed in a beaker is treated with dilute HCl, its colour changes to (a) white

(b) dark red (c)

bluish green

(d) no change.

Answer : (c) bluish green

(ii) P is an aqueous solution of acid and Q is an aqueous solution of base. When these two are diluted separately, then

(a) pH of P increases while that of Q decreases till neutralisation.

(b) pH of P decreases while that of Q increases till neutralisation.

(C) pH of both P and Q decrease.

(d) pH of both P and Q increase.

Answer : (a) pH of P increases while that of Q decreases till neutralisation.

(iii) Which of the following acids is present in bee sting?

(a) Formic acid

(b) Acetic acid

(c) Citric acid

(d) Hydrochloric acid

Answer : (c) Citric acid

(iv) Sting of ant can be cured by rubbing the affected area with soap because

(a) it contains oxalic acid which neutralises the effect of formic acid

(b) it contains aluminium hydroxide which neutralises the effect of formic acid

(c) it contains sodium hydroxide which neutralises the effect of formic acid (d) none of these

Answer : (c) it contains sodium hydroxide which neutralises the effect of formic acid

(v) The pH of soil X is 7.5 while that of soil Y is 4.5. Which of the two soils, should be treated with powdered chalk to adjust its pH?

(a) X only

(b) Y only

(c) Both X and Y (d) none of these

Answer : (b) Y only

