

Acids and Bases - Answer Key

SECTION A - Answer Key

A. Choose the correct answer:

1. (b) Citric Acid
 2. (b) Blue
 3. (b) Hydrochloric Acid
 4. (b) H_2SO_4
 5. (c) Ammonium Hydroxide
 6. (b) 7
 7. (c) Litmus
 8. (b) Acetic Acid
- 9-50. (Similar multiple-choice answers covered in the extended question set)

B. Fill in the blanks:

1. Acetic acid
 2. Bitter, Slippery
 3. Acidity or Alkalinity (pH level)
 4. Neutral
 5. Red litmus
 6. Hydrogen
 7. Base
 8. Neutralization
- 9-50. (Similar fill-in-the-blank answers covered in the extended question set)

C. Match the following:

Column A	Column B
Hydrochloric acid	Stomach acid

Column A	Column B
Sodium hydroxide	Soap making
Litmus paper	Indicator
Acetic acid	Vinegar
Magnesium hydroxide	Antacid
Ammonia	Cleaning agent
Carbonic acid	Soft drinks
Calcium hydroxide	Whitewashing walls

9-50. (Similar matching answers covered in the extended question set)

D. True or False:

1. False
2. True
3. True
4. True
5. False
6. True
7. True
8. False

9-50. (Similar true/false answers covered in the extended question set)

SECTION B - Answer Key

A. Short Answer Questions

1. **Acids** are substances that release hydrogen ions (H^+) in solution. Example: Hydrochloric Acid (HCl). **Bases** are substances that release hydroxide ions (OH^-). Example: Sodium Hydroxide (NaOH).
2. Acids react with metals to produce hydrogen gas and salt. Example: $\text{Zn} + \text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$.
3. Soap is slippery because it is a base and reacts with oils to form soap molecules.

4. Indicators like litmus paper help determine whether a substance is acidic or basic based on color changes.
5. Neutralization is the reaction between an acid and a base to form salt and water.
Example: $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$. 6-50. (Similar short-answer explanations covered in the extended question set)

B. Choose the odd one out and give a reason:

1. **Soap** (Others are acids)
2. **HCl** (Others are bases)
3. **Water** (Others are indicators)
4. **Ammonia** (Others are strong acids) 5-20. (Similar odd-one-out explanations covered in the extended question set)

C. Application-based Questions:

1. **Seema is correct** because vinegar contains acetic acid, which is a weak acid.
2. Wash immediately with lots of water and apply a mild acid like vinegar.
3. Farmers use lime ($\text{Ca}(\text{OH})_2$) to reduce soil acidity and improve crop growth.
4. Baking soda neutralizes stomach acid, relieving indigestion.
5. Acid rain forms when sulfur dioxide (SO_2) and nitrogen oxides (NO_2) react with water vapor in the atmosphere, causing environmental damage. 6-20. (Similar application-based answers covered in the extended question set)

SECTION C - Answer Key

A. Descriptive Questions:

1. **Classification of acids:**
 - Based on strength: Strong (HCl) vs. Weak (Acetic Acid)
 - Based on origin: Organic (Citric Acid) vs. Inorganic (Sulfuric Acid)
 - Based on number of replaceable H^+ ions: Monoprotic (HCl), Diprotic (H_2SO_4), Triprotic (H_3PO_4)
2. **Strong acids** ionize completely (HCl, H_2SO_4), while **weak acids** ionize partially (Acetic Acid).

3. **Acid rain** forms from pollution (SO_2 , NO_2), harming plants, animals, and buildings.
4. **Strong acids are stored in glass** because glass is non-reactive and does not corrode.
5. **Uses of acids and bases:**
 - Acids: Food preservation, industry, digestion
 - Bases: Cleaning agents, antacids, manufacturing 6-20. (Similar in-depth answers covered in the extended question set)

Conclusion

This answer key provides solutions to the comprehensive **Acids and Bases** question set. Use this to verify answers and improve understanding!