Acids and Its Classification

A. Choose the Correct Answer:

1. Which of the following is a characteristic property of acids?

A) Bitter taste
B) Soapy texture
C) Sour taste
D) Slippery feel

2. Which of the following acids is found in citrus fruits?

A) Sulfuric acid
B) Hydrochloric acid
C) Acetic acid
D) Citric acid

3. Which of these acids is commonly used in car batteries?

A) Nitric acid
B) Sulfuric acid
C) Hydrochloric acid
D) Phosphoric acid

B. Fill in the Blanks:

1. Acids turn blue litmus paper _____.
2. The acid present in vinegar is known as _____.
3. Strong acids completely _____ in water, while weak acids partially do so.

C. Case Study:

A chemist, Dr. Mehta, conducted an experiment to study the effects of different acids on various materials. He used three different acids: hydrochloric acid (HCl), acetic acid (CH_3COOH), and sulfuric acid (H_2SO_4).

- **Sample A** (a piece of marble) reacted vigorously with HCl, producing gas bubbles.
- **Sample B** (a piece of cloth) showed slight discoloration when treated with acetic acid.
- **Sample C** (a metal strip) corroded rapidly when exposed to sulfuric acid.

After the experiment, Dr. Mehta concluded that strong acids react more aggressively with materials, while weak acids have milder effects.

Case Study Questions:

1. What was the main objective of Dr. Mehta's experiment?
2. Why did Sample A react vigorously with hydrochloric acid?
3. What was the effect of acetic acid on Sample B, and why was it milder?
4. Based on the study, why should strong acids be handled with care?

D. Short Answer Questions

1. What are acids? Give two examples.
2. How do acids differ from bases in terms of properties?
3. What are some natural sources of acids?

E. Long Answer Questions

1. Explain the classification of acids based on strength and sources with examples.
2. Describe the role of acids in daily life and industrial applications.
3. Discuss the pH scale and how it is used to measure acidity.