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**Multiple Choice Questions**

1. **Litmus is used in the laboratory mainly because it can:**
  - (a) Taste substances
  - (b) Change temperature
  - (c) Produce odour
  - (d) Show colour changes in acidic and basic solutions
  
2. **Substances that turn blue litmus red are:**
  - (a) Basic
  - (b) Neutral
  - (c) Acidic
  - (d) Salty
  
3. **Soap solution generally feels slippery because it is:**
  - (a) Acidic
  - (b) Basic
  - (c) Neutral
  - (d) Salty
  
4. **Which natural indicator turns red in acids and green in bases?**
  - (a) Red rose extract
  - (b) Purple cabbage
  - (c) Turmeric paper
  - (d) Onion extract
  
5. **The colour of turmeric paper turns red in the presence of:**
  - (a) Acid
  - (b) Neutral solution
  - (c) Base
  - (d) Salt Base
  
6. **Lime water can neutralise the effect of:**
  - (a) Sugar
  - (b) Air
  - (c) Water
  - (d) Acid
  
7. **The acid injected by a red ant bite is:**
  - (a) Formic acid
  - (b) Acetic acid
  - (c) Hydrochloric acid
  - (d) Citric acid
  
8. **When an acid reacts with a base, the products formed are:**
  - (a) Only water
  - (b) Only salt
  - (c) Salt, water, and heat
  - (c) Only heat
  
9. **A substance that does not change the colour of either red or blue litmus paper is:**
  - (a) Neutral
  - (b) Basic
  - (c) Acidic
  - (d) Bitter

10. **Onion smell disappears in the presence of a base because onion acts as an:**
- (a) Synthetic indicator
  - (b) Olfactory indicator
  - (c) Natural dye
  - (d) Neutral substance

### Fill in the blanks :

11. Litmus paper is available in \_\_\_\_ and \_\_\_\_ colours.
12. Substances that taste sour generally contain \_\_\_\_.

### True / False

13. Plants with reticulate venation generally have a taproot system, while plants with parallel venation generally have fibrous roots.
14. All animals live only on land, and none can live in both land and water.

### Very Short Type Questions

15. What type of substances turns red litmus blue?
16. What does turmeric paper indicate?

### Short Type Questions

17. Why does turmeric paper turn red when a basic substance is added?
18. How does neutralisation help in treating soil acidity?

### Essay Type Questions

19. Explain how different natural and synthetic indicators help us identify acidic, basic, and neutral substances.
20. Describe the importance of neutralisation in daily life with examples from health, agriculture, and the environment.

### HOTS

21. **Assertion (A):** Red rose extract becomes green when added to a basic substance.  
**Reason (R):** Red rose extract gives a red colour in acidic solutions.  
Choose the correct option:
- 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



- (d)** Show colour changes in acidic and basic solutions
- (b)** Neutral
- (b)** Basic
- (a)** Red rose extract
- (c)** Base
- (d)** Acid
- (a)** Formic acid
- (c)** Salt, water, and heat
- (a)** Neutral
- (b)** Olfactory indicator
- Indicators
- Acetic
- True
- False
- Red litmus turns blue in a basic solution.
- Red rose extract is a natural indicator.
- Turmeric contains a natural pigment that reacts with bases and changes its colour to red. Since it does not react with acids or neutral substances, only bases cause this visible change.
- When soil becomes too acidic, plants cannot grow well. Adding a base like lime neutralises the extra acid and makes the soil suitable again for plant growth.
- Indicators are substances that change colour when added to acidic or basic solutions, helping us identify the nature of the material. Litmus, which comes from lichens, turns red in acids and blue in bases. Red rose extract changes to red in acidic solutions and green in basic ones, while turmeric turns red in the presence of bases but remains unchanged with acids and neutral substances. Synthetic indicators like phenolphthalein also change colour depending on the solution. By observing these colour changes, we can easily classify substances as acidic, basic, or neutral.
- Neutralisation is useful because it reduces the harmful effects of acids and bases in real life. When an ant bites, it injects formic acid into the skin, and applying baking soda helps by neutralising the acid. Farmers often treat acidic soil with lime to improve plant growth. Similarly, acidic factory waste can harm aquatic life, so it is neutralised with basic substances before being released into water bodies. These examples show how neutralisation protects our health, agriculture, and environment in practical ways.

21. Correct Answer: A) Both A and R are true, but R is not the correct explanation of A.

**Explanation:** Red rose extract does indeed turn green when added to a basic substance, so the assertion is correct. It also becomes red when added to an acidic solution, so the reason is also true. However, the reason does not explain why the extract becomes green in a base. The green colour is due to a different chemical reaction of the extract with basic substances. Therefore, both statements are correct, but the reason does not explain the assertion.

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