Solution

ACIDS, BASES, SALTS WORKSHEET

Class 10 - Science

1.

(c) red

Explanation: The colour of solution will change to red in dil. HCl which is acid.

2.

(d) IV

Explanation: No gas will be evolved in IV condition because NaOH does not react with sodium carbonate.

3. **(a)** B

Explanation: Blue litmus change into red by ethanoic acid in I whereas brisk effervescence due to CO_2 will be evolved in II.

$CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + CO_2 + H_2O$

4.

(d) I and II

Explanation: In I and II gas evolved will be CO_2 which is non supporter of combustion, therefore candle will get extinguished.

$2CH_3COOH + K_2CO_3 \rightarrow CO_2\uparrow + H_2O + 2KCH_3COO$

Sodium bicarbonate reacts with acetic acid to form water, carbon dioxide and sodium acetate.

$CH_3COOH + NaHCO_3 \rightarrow CH_3COONa + H_2O + CO_2\uparrow$

5.

(c) II only

Explanation: In I, no gas is evolved.

In II, H_2 gas will be evolved which burns explosively.

In III, No gas is evolved.

In IV, CO_2 gas will be evolved.

6. **(a)** 5

Explanation: Bases turn red litmus blue and acids turn blue litmus red. Acid solution has a pH value less than 7. Since the solution turns blue litmus red, its pH is likely to be 5.

7.

(c) (ii) only

Explanation: An electric circuit is a path in which the electrons flow from a voltage or current source. The electric current flows in a closed path. This electrical circuit is a closed-loop network giving a return path for the current. Sodium hydroxide conducts electrons in the form of sodium cations and hydroxyl anions. The ions move towards the two iron nails in the solution acting as the cathode (-) for catching cations and other as the anode (+) for catching anions.

8. **(a)** Rapid reaction in both the test tubes

Explanation: Reaction will be rapid in both test tubes

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

$Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

9.

(c) R > P > Q

Explanation: R > P > Q. Because R is basic having pH > 7 whereas, Q is acidic having pH value less than 7 whereas, P is neutral having pH = 7.

10.

(c) (i) and (ii)

Explanation: (i) and (ii)

11.

(b) I and III

Explanation: The reactions between

i. Zinc and dil HCl and

ii. dil HCl and Na_2CO_3 are fast whereas the reaction between Zn and NaOH is slow. There is no reaction between NaOH and Na_2CO_3.

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

$Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

12. **(a)** A

Explanation: Zinc reacts with dilute HCl and NaOH, whereas Na_2CO_3 reacts only with dilute HCl.

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

$Zn + 2NaOH \rightarrow Na_2ZnO_2 + H_2$

$Na_2CO_3 + 2HCl \rightarrow 2NaCl + H_2O + CO_2$

13. **(d)** II

Explanation: $Zn + 2NaOH \rightarrow Na_2ZnO_2 + H_2$

The gas evolved is tested properly such that delivery tube does not dip in the solution.

14. **(c)** R > P > Q

Explanation: R is basic ∴ pH is > 7

P is neutral, pH = 7

Q is red, acidic, i.e. pH is less than 7.

So, pH of R > P > Q

15. **(c)** Blue

Explanation: The colour will be blue as sodium bicarbonate is basic in nature and its pH is more than 7.

16. **(b)** in A red litmus remains red, in B it becomes blue

Explanation: Red paper that does not change color indicates the sample is an acid. Red paper turn in blue indicate the sample is basic. So, in acetic acid, red litmus remaining as it is whereas in Na_2CO_3 solution red litmus changes to blue.

17. **(b)** thistle funnel is not dipping in acetic acid solution and CO_2 gas escape.

Explanation: The thistle funnel should dip into acetic acid solution. When carbon dioxide, CO_2, enters the limewater, the limewater becomes milky.

18. **(a)** evolution of gas

Explanation: Zinc is more reactive than hydrogen. So, when dilute HCl is added to zinc metal, it displaces hydrogen from the acid to form zinc chloride and hydrogen gas. Following is the chemical equation for the reaction

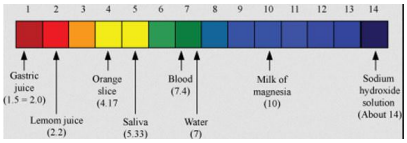
$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

19. **(d)** IV

Explanation: Acetic acid dissolves in water forming true solution which is homogeneous solution (clear solution).

20. **(b)** dilute sodium hydroxide

Explanation: The pH values of some common substances are indicated in the pH paper as shown in the following figure.



The above figure suggests that if the pH strip on being tested with a substance shows violet colour, then it is basic in nature. Out of the given substances, sodium hydroxide is the basic substance. Hence, the correct answer is sodium hydroxide.