

## NTSE-Worksheet-Chemistry-Acid and Base

**1 Which Acid is present in Tomato?**

(A) Citric Acid

**(B) Oxalic Acid**

(C) Lactic Acid

(D) HCl

**2. Which Acid is a strong Acid in the following?**

**(A) HCl pH 1**

(B)  $\text{CH}_3\text{COOH}$  pH 5

(C) Lemon juice pH 2.2

(D) Pure Milk pH 6

**3. pH value less than 7 indicates that the solution is –**

**(A) Acidic**

(B) Basic

(C) Neutral

(D) No effect

**4. Lactic Acid is present in-**

(A) Orange

(B) Tea

**(C) Curd**

(D) Vinegar

**5. Farmers neutralize the effect of Acidity on soil by adding**

**(A) Slaked Lime**

(B) Gypsum

(C) Caustic Soda

(D) Baking Soda

**6. Which of the following are present in a dilute Aqueous solution of Hydrochloric Acid?**

**(A)  $\text{H}_3\text{O}^+ + \text{Cl}^-$**

(B)  $\text{H}_3\text{O}^+ + \text{OH}^-$

(C)  $\text{Cl}^- + \text{OH}^-$

(D) Unionised HCl

**7.  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  In this Compound the water molecule is called –**

(A) Pure Water

**(B) Water of Crystallisation**

(C) Soda Water

(D) None of these

**8. An aqueous solution turns the red litmus solution blue. Excess addition of which of the following solutions would reverse the change?**

(A) Baking powder

(B) Lime

(C) Ammonium hydroxide solution

**(D) Hydrochloric acid**

**9. In which pH range does our body work to survive in the atmosphere?**

(A) 5.5 to 8.5

**(B) 7.0 to 7.8**

(C) 2.3 to 7.0

(D) 7.5 to 12.5

**10. When a base reacts with a metal, it forms a salt and hydrogen gas is released. By what method can the presence of hydrogen be detected?**

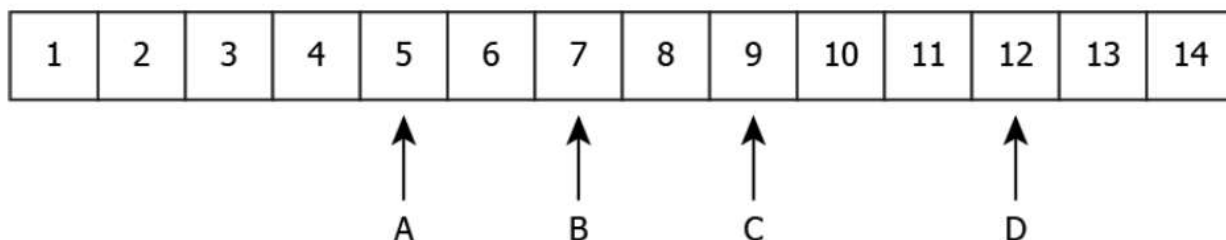
(A) by water

(B) by litmus paper

(C) by methyl orange

**(D) by a burning candle**

**11. The image shows the pH values of four solutions on a pH scale.**



**Which solutions are alkaline in nature?**

(A) A and B

(B) B and C

**(C) C and D**

(D) A and D

**12. Sodium carbonate reacts with hydrochloric acid produces**

(A) NaCl

(B) CO<sub>2</sub>

(C) H<sub>2</sub>O

**(D) All of the above**

**13. Which Acid is present in Tamarind?**

**(A) Tartaric acid**

(B) Oxalic Acid

(C) Lactic Acid

(D) Citric Acid

**14. What happens when an alkali is mixed with water?**

**(a) Heat is evolved**

(b) Heat is absorbed

(c) Concentration of acid increases

(d) All of the above

**15. Which acid is found in bee sting?**

(a) Citric acid

**(b) Formic acid**

(c) Tartaric acid

(d) Nitric acid

**16. Which of the following is alkali?**

**(a) Sodium hydroxide**

(b) Calcium carbonate

(c) Copper carbonate

(d) Carbonic acid

**17. Rubbing of which does give relief from pain in the case of bee sting?**

(a) Dilute hydrochloric acid

(b) Dilute nitric acid

**(c) Tooth paste**

(d) Alkali

18. When base reacts with the non-metal oxide

(a) **it neutralizes each other**

(b) it catches fire

(c) it produces acidic salts

(d) it produces basic salts

**19. The acid used for the manufacture of fertilizers and explosives is**

- (a) nitric acid**
- (b) sulphuric acid
- (c) phosphoric acid
- (d) hydrochloric acid

**20. The ratio of the water molecule in Plaster of Paris and Gypsum is**

- (a) 3:1
- (b) 1:3
- (c) 1:4**
- (d) 4:3

**21. Which one of the following can be used as an acid-base indicator by a visually impaired (blind) student?**

- (a) Litmus
- (b) Turmeric
- (c) Vanilla essence**
- (d) Petunia leaves

**22. Calcium phosphate is present in tooth enamel. Its nature is**

- (a) basic**
- (b) acidic
- (c) neutral
- (d) amphoteric

**23. Sodium hydroxide turns phenolphthalein solution**

- (a) pink**
- (b) yellow
- (c) colourless
- (d) orange

**24. Sodium hydroxide is used**

- (a) as an antacid
- (b) in manufacture of soap**
- (c) as a cleansing agent
- (d) in alkaline batteries

**25. Many salts absorb water from atmosphere. This property is called**

- (a) deliquescence**
- (b) efflorescence
- (c) hydration
- (d) addition

**26. Lime water reacts with chlorine to give**

**(a) bleaching powder**

(b) baking powder

(c) baking soda

(d) washing soda

**27. When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to**

(a) absorb the evolved gas

(b) moisten the gas

**(c) absorb moisture from the gas**

(d) absorb  $\text{Cl}^-$  ions from the evolved gas

28. A base can be prepared by the reaction between

(a) an active non-metal and water.

(b) a gas and water.

(c) a sulphide and water.

**(d) an active metal and water.**

**29. Sodium hydrogencarbonate when added to acetic acid evolves a gas. Which of the following statements is true about the gas evolved?**

(i) It turns lime water milky.

(ii) It extinguishes a burning splinter.

(iii) It dissolves in a solution of sodium hydroxide.

(iv) It has a pungent odour.

(a) (i) and (ii)

**(b) (i), (ii) and (iii)**

(c) (ii), (iii) and (iv)

(d) (i) and (iv)

**30. The acid having highest hydrogen ion concentration is one with**

(a)  $\text{pH} = 2.5$

**(b)  $\text{pH} = 1.8$**

(c)  $\text{pH} = 7$

(d)  $\text{pH} = 10$

31. What happens when excess of carbon dioxide gas is passed through lime water?

**(a) Lime water first turns milky and then colourless**

(b) Lime water turns bluish

(c) Lime water turns milky

(d) Lime water turns blackish

**32. Which of the following is taken orally as medicine in the case of hyperacidity to get relief?**

- (a) Sodium hydroxide
- (b) Calcium hydroxide
- (c) Milk of sodium
- (d) Milk of magnesia**

# NTSE WORKSHEET

## CHEMISTRY

### Chapter 2

#### Topic – Salts

1. Anhydrous  $\text{CuSO}_4$  is used for the detection of water vapour. Which property of anhydrous  $\text{CuSO}_4$  is used?
- (a) Anhydrous  $\text{CuSO}_4$  changes from solid state to liquid state in presence of water vapour.
- (b) Colourless anhydrous  $\text{CuSO}_4$  changes to blue coloured hydrated  $\text{CuSO}_4$**
- (c) Blue coloured anhydrous  $\text{CuSO}_4$  changes to colourless hydrated  $\text{CuSO}_4$
- (d) None of the above
2. Metal A reacts with water to give B. 'B' is used for white washing. On heating B gives C. C reacts with water to give back B Identify A, B and C.

	A	B	C
(1)	Ca	CaO	$\text{Ca(OH)}_2$
(2)	CaO	Ca	$\text{Ca(OH)}_2$
(3)	Ca	$\text{Ca(OH)}_2$	CaO
(4)	CaO	$\text{Ca(OH)}_2$	Ca

**Answer – Option 3 (A- Ca, B-  $\text{Ca(OH)}_2$ , C- CaO**

3. Aqueous solutions of which of the following salts will change the colour of blue litmus to red?
- i)  $\text{KNO}_3$
- ii)  $(\text{NH}_4)_2\text{SO}_4$
- iii)  $\text{Na}_2\text{CO}_3$
- iv)  $\text{NH}_4\text{Cl}$
- (a) (i) only.
- (b) (ii) and (iii) only
- (c) (ii) and (iv) only**
- (d) (i)' (ii) and (iv)

4. Permanent hardness of water is removed by-
- (A) Common salt
  - (B) Bleaching powder
  - (C) Washing soda
  - (D) Baking soda
  - (E)
5. The Chemical which is not required for the preparation of soap in the laboratory-
- (A) Vegetable oil
  - (B) Caustic soda
  - (C) Common salt
  - (D) Baking soda
6. Bleaching powder, shows bleaching property -
- (A) If produces chlorine gas,
  - (B) If produces nascent chlorine
  - (C) If forms lime water.
  - (D) If forms calcium chloride.
7. Nature of aqueous solution of salt obtained by the reaction of strong acid and strong base is-
- (A) Acidic
  - (B) Basic
  - (C) Neutral
  - (D) Amphoteric
8. In the manufacture of cement\_\_\_\_\_ is mixed with the clinkers
- (A) Gypsum powder
  - (B) Magnesium powder
  - (C) Alumina powder
  - (D) none of the above.



9. A metal 'X' forms a water-soluble salt  $XNO_3$ . When an aqueous solution of  $XNO_3$ , is added to common salt solution, then a white precipitate of compound 'Y' is formed along with sodium nitrate solution. Metal 'X' is said to be the best conductor of electricity and it does not evolve hydrogen when put in dilute hydrochloric acid. What is metal 'X', salt  $XNO_3$ , and compound 'Y'?
- (1) Metal 'X' is Silver (Ag), Salt is Silver Nitrate and compound 'Y' is Silver Chloride.
- (2) Metal 'X' is Magnesium (Mg), Salt is Magnesium Nitrate and compound 'Y' is Magnesium Chloride.
- (3) Metal 'X' is Lead (Pb), Salt is Lead Nitrate and compound 'Y' is Lead Chloride.
- (4) Metal 'X' is Copper (Cu), Salt is Copper Nitrate and compound 'Y' is Copper Chloride
10. The salt which will give a neutral solution on dissolving in water will be:-
- (1)  $CH_3COONa$
- (2)  $NH_4Cl$
- (3) **KCl**
- (4)  $Na_2CO_3$
11. Molecular formula of baking soda is....
- (1)  $Na_2CO_3$
- (2)  $NaCl$
- (3)  **$NaHCO_3$**
- (4)  $NaOH$
12. The colour of anhydrous copper sulphate is \_\_\_\_\_ .
- (A) Blue (B) **White**
- (C) Pink (D) Green

13. Strong electrolytes is -  
(A)  $\text{NH}_4\text{OH}$                       (B)  $\text{Ca}(\text{OH})_2$   
(C)  $\text{H}_2\text{CO}_3$                       (D)  $\text{NaCl}$
14. The chemical formula of Plaster of Paris is –  
(A) Calcium Sulphate [ $\text{CaSO}_4$ ]  
(B) Calcium Sulphate Hemihydrate [ $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ ]  
(C) Barium Sulphate [ $\text{BaSO}_4$ ]  
(D) None of these
15. Shyam and Hari have 2 identical pieces of marble chips with same mass. They take equal volumes of dil. HCl with the same concentration in two different test tubes. Shyam puts the marble piece directly into the acid whereas Hari powdered the marble piece and puts it into the test tube. What will be the correct observation made?  
(A) Reaction in Shyam's test tube will be faster  
(B) Reaction in Hari's test tube will be faster  
(C) Both reactions will happen in the same speed  
(D) No reaction happens in both the test tubes
16. When  $\text{CO}_2$  gas is passed through lime water, the solution turns milky. This is due to the formation of:  
(A)  $\text{CaCO}_3$                       (B)  $\text{CaO}$                       (C)  $\text{Ca}(\text{HCO}_3)_2$                       (D)  $\text{Ca}(\text{OH})_2$
17. Which of these salts will give acidic solution?  
(1)  $\text{Na}_2\text{CO}_3$                       (2)  $\text{NaCl}$                       (3)  $\text{NH}_4\text{Cl}$                       (4)  $\text{CH}_3\text{COONa}$

18. Plaster of Paris hardens by:
- (A) Losing  $\text{CO}_2$
  - (B) Absorbing  $\text{CO}_2$
  - (C) Absorbing water**
  - (D) Releasing water
19. Which of the following contain five molecules of water of crystallization?
- (1) Blue Vitriol**
  - (2) White Vitriol
  - (3) Epsom Salt
  - (4) Green Vitriol
20. Which of the following salt does not contain the water of crystallization
- (1) blue vitriol
  - (2) baking soda**
  - (3) washing soda
  - (4) gypsum
21. What happens when dil.  $\text{H}_2\text{SO}_4$  is added to baking soda?
- a)  $\text{SO}_2$  gas is evolved.
  - b) sodium sulphate is formed.**
  - C) An acidic salt is produced.
  - d) All of the above.
22. Bleaching powder is commercially called-
- a) chloride of lime.
  - b) chlorinated lime.
  - c) both.**
  - d) none.

23. Ammonium chloride is a salt of:
- (a) Weak Acid and Weak Base
  - (b) Weak Acid and Strong Base
  - (c) Strong Acid and Strong Base
  - (d) Strong Acid and Weak Base**
24. A metal carbonate (X) on thermal decomposition produces a solid residue and a gas (Y). When (Y) is passed through aqueous solution of another substance (Z) gives back X. The compounds X, Y and Z respectively are
- (a)  $\text{Ca(OH)}_2$ ,  $\text{CaCO}_3$ ,  $\text{CO}_2$
  - (b)  $\text{Ca(HCO}_3)_2$ ,  $\text{Ca(OH)}_2$ ,  $\text{CaCO}_3$
  - (c)  $\text{CaCO}_3$ ,  $\text{CO}_2$ ,  $\text{Ca(OH)}_2$
  - (d)  $\text{CaCO}_3$ ,  $\text{CO}_2$ ,  $\text{Ca(HCO}_3)_2$**
25. Formula of Gypsum is \_\_\_\_\_
- (a)  $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$
  - (b)  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
  - (c)  $\text{MgSO}_4 \cdot 2\text{H}_2\text{O}$
  - (d)  $\text{Na}_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$
26. Setting of plaster of Paris takes place due to
- (a) oxidation
  - (b) reduction
  - (c) dehydration
  - (d) hydration**

27. The difference in number of water molecules in gypsum and plaster of paris is-
- (a)  $5/2$
  - (b) 2
  - (c)  $1/2$
  - (d)  $3/2$
28. Brine is an aqueous solution of
- (a) Sodium hydroxide
  - (b) Sodium oxide
  - (c) Sodium chloride
  - (d) Potassium chloride
29. An aqueous solution of the salt is acidic in nature. Which of the following acids and bases react to give this salt?
- (a) Strong acid and weak base
  - (b) Strong acid and strong base
  - (c) Weak acid and weak base
  - (d) Weak acid and strong base
30. Plaster of Paris is made from
- (a) lime stone
  - (b) slaked lime
  - (c) quick lime
  - (d) gypsum