GIRI SIR'S CLASSES

HATIGAON, GUWAHATI

ACIDS AND BASES

Class 10 - Science

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 60**

General Instructions:

All the questions are compulsory.

1. Which of the following gives CO_2 on heating? **[1]**

   a) Quick lime
   b) Limestone
   c) Slaked lime
   d) Soda ash

2. A student is asked to add a teaspoon full of solid sodium bicarbonate to a test tube containing approximately 3 mL of acetic acid. He observed that the solid sodium bicarbonate. **[1]**

   a) reacts with acetic acid and a clear solution is obtained
   b) floats on the surface of acetic acid
   c) settles down in the test tube
   d) remains suspended in the acitic acid

3. Four solutions P, Q, R and S have PH 2, 7, 9 and 13, respectively. Which of the solution will turn phenolphthalein pink? **[1]**

   a) R and S
   b) S only
   c) Q and S
   d) P only

4. What happens when a solution of an acid is mixed with a solution of a base in a test tube **[1]**

   i. The temperature of the solution increases
   ii. The temperature of the solution decreases
   iii. The temperature of the solution remains the same
   iv. Salt formation takes place

   a) (ii) and (iii)
   b) (i) and (iii)
   c) (i) only
   d) (i) and (iv)

5. What is the nature of non-metallic oxides? **[1]**

   a) Basic oxide
   b) Amphoteric oxide
   c) Neutral oxide
   d) Acidic oxide

6. Which of the following gives the correct increasing order of acidic strength? **[1]**

   a) Hydrochloric acid < Water < Acetic acid
   b) Water < Acetic acid < Hydrochloric acid
   c) Water < Hydrochloric acid < Acetic acid
   d) Acetic acid < Water < Hydrochloric acid

7. Dry HCl gas does not show acidic nature because **[1]**

   a) it is dry
   b) it does not ionize to form H^+ and Cl^- ions

c) it is a polar covalent compound
d) it is a gas

8. For dilution of concentrated acids, we should add **[1]**

a) concentrated acid to water
b) water to concentrated acid
c) first water into acid and then more acid
d) both water to concentrated acid and concentrated acid to water

9. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change? **[1]**

a) Baking powder
b) Ammonium hydroxide solution
c) Hydrochloric acid
d) Lime

10. Between dilute and concentrated samples of HNO_3 which sample of HNO_3 will have a higher H^+ ion concentration? **[1]**

a) Conc. HNO_3
b) Dil. HNO_3
c) Both have same H^+ ion concentration
d) No H^+ ion is present is HNO_3

11. If the pH of a solution is 13, it means that it is **[1]**

a) Weakly acidic
b) Strongly Basic
c) Strongly acidic
d) Weakly basic

12. An aqueous solution with pH-zero is **[1]**

a) Amphoteric
b) Neutral
c) Alkaline
d) Acidic

13. A solution turns red litmus blue, its pH is likely to be **[1]**

a) 4
b) 1
c) 10
d) 5

14. Name an indicator which indicates the various levels of hydrogen ion concentration. **[1]**

a) None of these
b) Phenolphthalein
c) Universal indicator
d) Litmus paper

15. Which one of the following types of medicines is used for treating indigestion? **[1]**

a) Antacid
b) Antiseptic
c) Antibiotics
d) Analgesic

16. **Assertion (A):** Sodium hydroxide reacts with zinc to produce hydrogen gas. **[1]**
Reason (R): Acids react with active metals to produce hydrogen gas.

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.

17. **Assertion (A):** Tap water conducts electricity but distill water does not conducts electricity. **[1]**
Reason (R): Tap water conducts electricity as it contains ions whereas distilled water does not contain ions.

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.

18. **Assertion (A):** Gas bubbles are observed when sodium carbonate is added to dilute hydrochloride acid. **[1]**

Reason (R): Carbon dioxide is given off in the reaction.

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.

19. **Assertion (A):** HCl produces hydronium ions (H_3O^+) and chloride ions (Cl^-) in aqueous solution. **[1]**

Reason (R): In presence of water, basic give H^+ ions.

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.

20. **Assertion (A):** The aqueous solution of glucose and alcohol does not show acidic character. **[1]**

Reason (R): Aqueous solutions of glucose and alcohol do not give H^+ ions.

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.

21. **Assertion (A):** On adding H_2SO_4 to water the resulting aqueous solution gets corrosive. **[1]**

Reason (R): Hydronium ions are responsible for corrosive action.

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.

22. **Assertion(A):** Ammonia solution is an alkali. **[1]**

Reason (R): Ammonia solution turns blue litmus paper red.

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.

23. **Assertion (A):** HCl gas does not change the color of dry blue litmus paper. **[1]**

Reason (R): HCl gas dissolves in the water present in wet litmus paper to form H^+ ions.

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.

24. **Assertion (A):** Curd and sour substances should not be stored in copper vessels. **[1]**

Reason (R): Curd and other sour substances should not be kept in brass and copper vessels as they contain acids.

a) Both A and R are true and R is the correct

b) Both A and R are true but R is not the

explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

25. **Assertion (A):** Dry HCl gas does not change the colour of the dry litmus paper. **[1]**

Reason (R): It is because dry HCl does not contain the OH^- ions.

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.

26. **Assertion (A):** Weak acids have low electrical conductivity. **[1]**

Reason (R): Strong acids and weak acid have an equal concentration of hydrogen ions in their solutions.

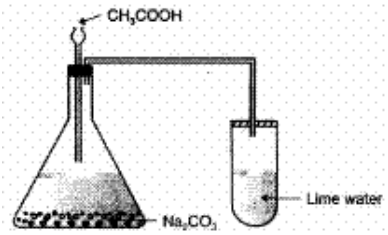
a) Both A and R are true and R is the correct explanation of A.

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.

27. What is wrong in the given set up if lime water does not change milky? **[1]**



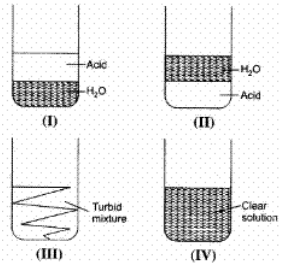
a) sodium carbonate should be taken in solution form

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

c) solid acetic acid should be added

d) apparatus is not air tight

28. 5 ml of acetic acid was added to 5 ml of water in a test tube. The resulting mixture is correctly represented in the diagram **[1]**



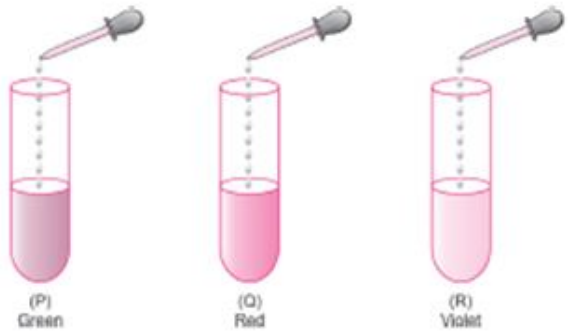
a) II

b) I

c) III

d) IV

29. On adding a few drops of universal indicator to three colourless solutions taken separately in three test tubes labelled P, Q, R respectively the colours developed in the solutions are marked in the following figures. **[1]**



The correct order of their pH value is

a) P > R > Q

b) Q > R > P

c) R > P > Q

d) P > Q > R

30. Which of the following pairs of safety symbols are marked on the bottles of commercial acetic acid available in the laboratory? **[1]**

a) III

b) I

c) IV

d) II

31. Which gas would be evolved, if sodium bicarbonate is treated with tartaric acid? **[1]**

32. Write equation for the reaction of iron with steam. Name the compound of iron obtained. **[1]**

33. What is base ? **[1]**

34. A gas is liberated immediately with a brisk effervescence when you add acetic acid to sodium hydrogen carbonate powder in a test tube. Name the gas evolved and describe the test that confirms the identity of the gas. **[1]**

35. What do you observe when you add few drops of acetic acid to a test tube containing **[1]**

i. Phenolphthalein

ii. Distilled water

iii. Universal indicator

iv. Sodium hydrogen carbonate powder.

36. What is the change in pH value of milk when it changes into curd? Explain. **[1]**

37. Which gas is evolved when sodium hydrogen carbonate ($NaHCO_3$) is added to acetic acid? **[1]**

38. What the colour of litmus in neutral solution ? **[1]**

39. Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason. **[1]**

40. What is the lime water commonly used in laboratories ? **[1]**

41. What will happen if water is added to an acid or a base? **[1]**

42. Name one natural source of each of the following acids: **[1]**

a. Citric acid

b. Oxalic acid

c. Lactic acid

d. Tartaric acid

43. What is the common name of water-soluble bases? **[1]**

44. A substance X which is used as an antacid reacts with dilute hydrochloric acid to produce a gas Y which is used **[1]**

in one type of fire-extinguisher. Name the substance X and gas Y. Write a balanced equation for the chemical reaction which takes place.

45. Why do HCl, HNO_3 etc. show acidic characters in aqueous solution while solutions of compounds like alcohol and glucose do not show acidic character? **[1]**

46. Why does dry HCl gas not change the colour of the dry litmus paper? **[1]**

47. How is the neutralisation of a carbonate with an acid different from the neutralisation of an oxide or a hydroxide? **[1]**

48. Why does an aqueous solution of an acid conduct electricity? **[1]**

49. Why does not an acid show any acidic behavior in the absence of water? **[1]**

50. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing anhydrous calcium chloride. What is the role of anhydrous calcium chloride taken in the guard tube? **[1]**

51. A solution has pH of 7. Explain how would you **[1]**

    i. decrease its pH?

    ii. increase its pH

52. What is meant by strong acids and weak acids? Classify the following into strong acids and weak acids: HCl, CH_3COOH, H_2SO_4, HNO_3, H_2CO_3, H_2SO_3 **[1]**

53. What is the pH of solution **B** which liberates NH_3 gas with an ammonium salt? Give reason? **[1]**

54. You have been provided with three test-tubes. One of these test-tubes contains distilled water and the other two contain an acidic and a basic solution respectively. If you are given only blue litmus paper, how will you identify the contents of each test-tube? **[1]**

55. What colour will be produced when we put a drop of distilled water on it? What is the pH of distilled water? **[1]**

56. Name one animal and one plant whose stings contain formic acid (or methanoic acid). **[1]**

57. What is the pH of gastric juice, which is released during digestion? **[1]**

58. What is the approximate value of pH of blood ? **[1]**

59. Give two examples of weak acids. **[1]**

60. PH value of same concentration of gastric juice and lemon juice are 1.5 and 2.4 respectively. Which is less acidic? **[1]**