

CHEMISTRY SET IV

Subject Code: 4300006

Date: 2025-04-16

Subject Name: CHEMISTRY

Time Duration: 117.0 minutes

Total Marks: 156

Instructions:

1. Stable Internet Required: Ensure a good connection.
2. Use Allowed Devices: Only a laptop/PC; no mobile phones or smartwatches.
3. No Switching Tabs: Changing windows may lead to disqualification.
4. Answer all questions within the given time limit. No extra time will be provided.
5. Submit the exam before the deadline, as responses will not be accepted afterward.

1. What happens when a base is added to vanilla ?

2

- ☐ Color of vanilla changes into red
- ☐ Vanilla becomes colourless
- ☒ Vanilla loses its smell
- ☐ Nothing happens

2. Calcium phosphate is present in tooth enamel. Its nature is

2

- ☒ Basic
- ☐ Acidic
- ☐ Neutral
- ☐ Amphoteric

3. The odour of acetic acid resembles that of

2

- ☐ Rose
- ☐ Burning Plastic
- ☒ Vinegar
- ☐ Kerosene

4. Ammonium sulphate salt is

2

- ☐ Basic Salt
- ☒ Acidic Salt
- ☐ Neutral Salt
- ☐ Complex Salt

5. Which one of the following will turn red litmus blue ?

2

- ☐ Vinegar
- ☒ Baking soda Solution
- ☐ Lemon Juice
- ☐ Soft drinks

6. Chemical formula of baking soda is

2

- ☐ $MgSO_4$
- ☐ Na_2CO_3
- ☒ $NaHCO_3$
- ☐ $MgCO_3$

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

2

- ☐ Baking Powder
- ☐ Lime
- ☐ Ammonium hydroxide solution
- ☒ Hydrochloric acid

8. What is the pH value of sodium chloride ?

2

- ☒ 7
- ☐ More than 7
- ☐ Less than 7
- ☐ Zero



- 9. Dilute acid does not produce carbon dioxide on being treated with** 2
☐ Marble ☒ Lime ☐ Baking soda ☐ Limestone
- 10. Setting of plaster of Paris takes place due to** 2
☐ oxidation ☐ reduction ☐ dehydration ☒ hydration
- 11. Sodium carbonate is a basic salt because it is a salt of a** 2
☐ strong acid and strong base
☐ weak acid and weak base
☐ strong acid and weak base
☒ weak acid and strong base
- 12. Lime water is** 2
☐ CaO ☒ Ca(OH)₂ ☐ CaCO₃ ☐ CaCl₂
- 13. Which one of the following types of medicines is used for treating indigestion ?** 2
☐ Antibiotics ☐ Analgesic ☒ Antacid ☐ Antiseptic
- 14. You have been provided with three test tubes. One of them contains distilled water and the other two contains an acidic solution and basic solution respectively. Which of the following will turn red litmus to blue.** 2
☐ Acid ☒ Base ☐ Water ☐ All of Above
- 15. Acids react with metals to liberate gas** 2
☐ Carbon Dioxide ☐ Carbon monoxide ☒ Hydrogen ☐ Water
- 16. Acids react with metal carbonates to liberate gas** 2
☒ Carbon dioxide ☐ Carbon Monoxide ☐ Hydrogen ☐ Water
- 17. Lime water turns milky when carbon dioxide is passed due to the formation of** 2
☒ CaCO₃ ☐ CaO ☐ CO₂ ☐ CaSO₄
- 18. The milkiness (on passing excess carbon dioxide gas through lime water) disappears due to formation of :** 2
☐ Calcium carbonate CaCO₃
☒ Calcium hydrogen carbonate CaHCO₃
☐ Calcium Oxide CaO
☐ Calcium Nitrate Ca(NO₃)₂
- 19. Acids react with bases to form salt and water. This reaction is known as:** 2
☐ Combination ☐ Decomposition ☒ Neutralization ☐ Reduction



- 20. A calcium compound reacts with dilute hydrochloric acid to produce effervescence . The gas evolved extinguishes a burning candle. Identify compound and the gas evolved** 2
- ☒ Calcium carbonate, Carbon dioxide
 - ☐ Calcium chloride, carbon dioxide
 - ☐ Calcium oxide, hydrogen
 - ☐ Calcium carbonate, hydrogen
- 21. How is the concentration of hydronium ions (H_3O^+) affected when a solution of an acid is diluted ?** 2
- ☐ Increases ☒ Decreases ☐ Remains the same ☐ Becomes Zero
- 22. When a bee stings immediately a paste of lime is put on the sting. Why ?** 2
- ☐ Bee sting is made of a base
 - ☒ Bee sting contains an acid called formic acid it gets neutralised with CaO
 - ☐ Bee sting is acidic due to hydrochloric acid and this is neutralised
 - ☐ All of Above
- 23. Methyl orange is** 2
- ☒ Pink in acidic medium, yellow in basic medium
 - ☐ Yellow in acidic medium, pink in basic medium
 - ☐ Colourless in acidic medium, pink in basic medium
 - ☐ None of above
- 24. Tooth enamel is made up of ?** 2
- ☒ calcium phosphate ☐ calcium carbonate ☐ calcium oxide ☐ potassium
- 25. If pH of solution is 13, it means that it is** 2
- ☐ Weakly acid ☐ Weakly basic ☒ Strongly basic ☐ Strongly acidic
- 26. 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** 2
- ☐ absorb the evolved gas
 - ☐ moisten the gas
 - ☒ absorb moisture from the gas
 - ☐ absorbs Cl^- ions from the evolved gas
- 27. An aqueous solution with pH-zero is** 2
- ☒ Acidic ☐ Alkaline ☐ Neutral ☐ Amphoteric
- 28. Bleaching powder is used as disinfectant for water to :** 2
- ☐ Make water tastier
 - ☐ remove all the dirt from water
 - ☒ Make water germ-free
 - ☐ Make water clear



29. In terms of acidic strength, which one of the following is in the correct increasing order ?

2

- ☒ Water < Acetic acid < Hydrochloric acid
- ☐ Water < Hydrochloric acid < Acetic Acid
- ☐ Acetic acid < Water < Hydrochloric acid
- ☐ Hydrochloric acid < Water < Acetic acid

30. Brine is an

2

- ☐ aqueous solution of sodium hydroxide
- ☐ aqueous solution of sodium carbonate
- ☒ aqueous solution of sodium chloride
- ☐ aqueous solution of sodium bicarbonate

31. $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ is

2

- ☒ Washing soda
- ☐ Baking soda
- ☐ Bleaching powder
- ☐ Tartaric Acid

32. Alkalis are

2

- ☐ acids, which are soluble in water
- ☐ acids, which are insoluble in water
- ☐ bases, which are insoluble in water
- ☒ bases, which are soluble in water

33. Egg shell is made up of

2

- ☒ CaCO_3
- ☐ CaO
- ☐ Ca(OH)_2
- ☐ CaCl_2

34. Aluminium oxide. Its nature is

2

- ☐ Basic
- ☐ Acidic
- ☐ Neutral
- ☒ Amphoteric

35. Lime water reacts with chlorine to give

2

- ☒ bleaching powder
- ☐ baking powder
- ☐ baking soda
- ☐ washing soda

36. Sodium Hydroxide is used

2

- ☐ as an antacid
- ☐ in manufacturing of soap
- ☐ as a cleansing agent
- ☒ in alkaline

37. Sodium hydroxide is a ____

2

- ☐ weak base
- ☐ weak acid
- ☒ strong base
- ☐ strong acid

38. What happens when a solution of an acid is mixed with a solution of base in a test tube ? 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.

2

- ☐ (i) only
- ☐ (i) and (ii)
- ☐ (ii) and (iii)
- ☒ (i) and (iv)



- 39. Which of the following is correct about an aqueous solution of an acid and of a base ? i) Higher the pH, stronger the acid ii) Higher the pH, weaker the acid iii) Lower the pH, Stronger the base iv) Lower the pH, weaker the base** 2
- ☐ (i) and (iii) ☐ (ii) and (iii) ☐ (i) and (iv) ☒ (ii) and (iv)
- 40. when copper oxide and dilute hydrochloric acid react, colour changes to** 2
- ☐ white ☒ Bluish - Green ☐ blue black ☐ black
- 41. Nettle sting is a natural source of which acid ?** 2
- ☒ Methanoic acid ☐ Lactic acid ☐ Citric Acid ☐ Tartaric Acid
- 42. A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the color of this pH paper to greenish-blue ?** 2
- ☐ Lemon Juice ☐ Vinegar ☐ Common salt ☒ An Antacid
- 43. Sodium hydroxide turns phenolphthalien solution** 2
- ☒ pink ☐ yellow ☐ colourless ☐ orange
- 44. Which of the following is not a acidic salt ?** 2
- ☐ CuSo4 ☒ NH4Cl ☐ FeCl3 ☐ CH3COOHNa
- 45. A solution of NaCl i) will turn red litmus blue ii) will turn pH paper green iii) will turn blue litmus red iv) will not affect litmus** 2
- ☐ (i) and (ii) ☐ (i) and (iii) ☐ (i) and (iv) ☒ (ii) and (iv)
- 46. Many salts absorbs water from atmosphere. This property is called** 2
- ☒ Deliquescence ☐ Efflorescence ☐ Hydration ☐ Addition
- 47. What is formed when zinc reacts with sodium hydroxide ?** 2
- ☐ Zinc Hydroxide and sodium
☒ Sodium Zincate and hydrogen gas
☐ Sodium Zinc-Oxide and hydrogen gas
☐ Sodium zincate and water
- 48. Some fruits like mango, lemon, raw grapes, orange, etc have a sour taste due to prescence of** 2
- ☐ Acetic acid ☒ Citric Acid ☐ Lactic acid ☐ Oxalic acid
- 49. The chemical formula of caustic potash is** 2
- ☐ NaOH ☐ Ca(OH)2 ☐ NH4OH ☒ KOH



50. Which of the give is incorrect ?

2

- ☐ Acid turns blue litmus red
- ☐ Aqueous solutions of acids conduct electricity
- ☐ Acid react with certain metals to form hydrogen gas
- ☒ None of these

51. Acid present in apple is

2

- ☐ Oxalic acid ☒ Mallic acid ☐ Formic acid ☐ Acetic acid

52. A strong acid

2

- ☒ Completely get ionized in water
- ☐ partially gets ionised in water
- ☐ do not get ionized in water
- ☐ All of these

53. Which one of the following is true, if a substance has a pH value of 4 ?

2

- ☐ The substance is a Base
- ☒ The substance is an acid
- ☐ The substance is a neutral substance
- ☐ Either (1) or (2)

54. Which of the following phenomena occurs when acid is mixed with water i) Neutralization ii) Dilution iii) Ionization

2

- ☐ only (ii) is correct
- ☐ (i) and (ii) are correct
- ☒ (ii) and (iii) are correct
- ☐ Only (iii) is correct

55. What is the pH value of saliva ?

2

- ☐ 2.2 ☐ 12.2 ☒ 6.7 ☐ 4.7

56. Turmeric colour in basic medium is ____ but in acid it is ____ .

2

- ☐ Pink, Colourless ☐ Yellow, Pink ☐ Pink, Orange ☒ red and unchanged

57. A drop of liquid sample was put on the pH paper, paper liquid sample must be of turn red to blue The

2

- ☐ Lemon Juice ☐ HCL ☒ Sodium bicarbonate ☐ Ethanoic acid

58. Why does dry HCL gaa not change the colour of the dry litmus paper ?

2

- ☒ No H_3O^+ ions will be present, litmus change colour only in the presence of H_3O^+ ions
- ☐ Blue litmus becomes dry in presence of HCL gas
- ☐ HCL gas acts as a dehydration agent
- ☐ None of Above

59. Atmosphere of venus is made up of ?

2

- ☐ Baking powder ☐ Lime ☒ Sulphuric Acid ☐ Hydrochloric Acid



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

- ☐ Litmus ☐ Turmeric ☒ Vanilla Essence ☐ Petunia Leaves

2

61. Which of the following is acidic in nature ?

- ☒ Lime Juice ☐ Human Blood ☐ Lime water ☐ Antacid

2

62. Which of the following is not a mineral acid ?

- ☐ HCL (hydrochloric acid) ☒ Citric Acid ☐ Sulphuric Acid ☐ Nitric Acid

2

63. Which among the following is not a base ?

- ☐ NaOH ☐ KOH ☐ NH₄OH ☒ C₂H₅OH

2

64. Which of the following statements is true for acids ?

- ☐ Bitter and change red litmus to blue
☐ Sour and change red litmus to blue
☐ Sour and change blue litmus to red
☒ Bitter and change blue litmus to red

2

65. Which of the following are present in a dilute aqueous solution of hydrochloric acid ?

- ☒ H₃O⁺ + Cl⁻ ☐ H₃O⁺ + OH⁻ ☐ Cl⁻ + OH⁻ ☐ Unionised HCL

2

66. Which of the following statements is not correct ?

- ☐ Acid turn blue litmus to red
☐ Raw onion can be used as olafactory indicator to check acid or base
☒ Bases are sour in taste
☐ Vanilla essence does not give odour in strong basic solutions

2

67. Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements are true about the gas evolved ? i) It turns lime water milky ii) it extenguishes a burning splinter iii) it dissolves in a solution of sodium hydroxide iv) It has a pungent odour

- ☐ I and II ☒ I, II and III ☐ II, III, IV ☐ I and IV

2

68. If a few drops of a concentrated acid accidentally spills over the hand of the student, what should be done ?

- ☐ Wash the hand with saline water
☐ Wash the hand immediately with plenty of water and apply a paste of sodium hydrogencarbonate
☐ After washing with plenty of water apply solution of sodium hydroxide on the hand.
☒ Neutralize the acid with a strong alkali

2

69. To protect tooth decay we are advised to brush our teeth regularly. The nature of the toothpaste commonly used is

- ☐ Acidic ☐ Neutral ☒ Basic ☐ Corrosive

2



70. Equal volumes of hydrochloric acid and sodium hydroxide solutions of same concentration are mixed and the pH of the resulting solution is checked with a pH paper. What would be the color obtained?

- ☐ Red ☐ Yellow ☒ Yellowish green ☐ Blue

2

71. The pH of Gastric juice is

- ☐ < 6.5 ☐ ≥ 7 ☒ 1.5 to 3.5 ☐ None of Above

2

72. pH of a solution having hydrogen ion concentration of 1M is

- ☒ 0 ☐ 1 ☐ 10 ☐ 14

2

73. Identify the correct representation of reaction occurring during chlor-alkali process.

- ☐ $2\text{NaCl (l)} + 2\text{H}_2\text{O (l)} \rightarrow 2\text{NaOH (l)} + \text{Cl}_2\text{(g)} + \text{H}_2\text{(g)}$
☒ $2\text{NaCl (aq)} + 2\text{H}_2\text{O (l)} \rightarrow 2\text{NaOH (aq)} + \text{Cl}_2\text{(g)} + \text{H}_2\text{(g)}$
☐ $2\text{NaCl (aq)} + 2\text{H}_2\text{O (g)} \rightarrow 2\text{NaOH (aq)} + \text{Cl}_2\text{(g)} + \text{H}_2\text{(g)}$
☐ None

2

74. Bleaching Powder is

- ☐ CaO_2Cl_2 ☒ CaOCl_2 ☐ CaClO_2 ☐ $\text{CaCl}_2 + \text{O}_2$

2

75. Plaster of Paris is

- ☐ CaSO_4 ☐ $\text{CaSO}_4 \cdot \text{H}_2\text{O}$ ☐ $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ ☒ $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$

2

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

- ☐ 5.5 to 5.8 ☐ 2.3 to 6 ☒ 7.0 to 7.8 ☐ 8.4 to 11.6

2

77. 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?

- ☒ By Water ☐ By litmus paper ☐ By methyl orange ☐ By burning a Candle

2

78. At what temperature is gypsum heated to form Plaster of Paris? (in Celsius)

- ☐ 70 ☒ 100 ☐ 40 ☐ 60

2

