

CHEMISTRY SET III

Subject Code: 4300006

Date: 2025-04-16

Subject Name: CHEMISTRY

Time Duration: 103.5 minutes

Total Marks: 138

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 dilute hydrochloric acid is added to iron filling ?

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- ☒ Hydrogen gas and iron chloride are produced
- ☐ Chlorine gas and iron hydroxide are produced
- ☐ No reaction takes place
- ☐ Iron salt and water are produced

2. The solution of FeO + Chlorine turns _____ due to formation of iron (II) chloride (FeCl₂).

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- ☐ Brown ☐ Yellow ☐ Light Blue ☒ Light green

3. A student added dilute HCL to a test tube containing zinc granules and made following observations:

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- ☐ The zinc surface become dull and black
- ☒ A gas evolved which burnt with a pop sound.
- ☐ The solution remains colourless
- ☐ The solution becomes green in colour.

4. Which of the following reactions will produce effervescence due to gas formation ?

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- ☐ Copper (Cu) reacting with dilute hydrochloric acid (HCL)
- ☒ Zinc (Zn) reacting with dilute sulfuric acid (H₂SO₄)
- ☐ Iron (Fe) reacting with copper sulphate (CuSO₄) solution
- ☐ Sodium chloride (NaCl) dissolving in water

5. Which of the following reactions will produce effervescence due to carbon dioxide gas (CO₂) ?

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- ☐ Mg reacting with HCL
- ☒ Na₂CO₃ reacting with H₂SO₄
- ☐ Iron (Fe) reacting with hydrochloric acid (HCL)
- ☐ Copper (Cu) reacting with dilute nitric acid (HNO₃)



6. The reaction of Hydrogen (H₂) gas with Oxygen gas to form water is an example of

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- ☐ Combination reaction
- ☐ Redox reaction
- ☐ Exothermic reaction
- ☒ All of these reaction

7. The blue flame in the below image represents the burning of which metal ?

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- ☐ Iron
- ☒ Copper
- ☐ Sodium
- ☐ All metal burn to give a blue flame

8. The yellow flame is observed on burning which metal ?

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- ☐ Copper
- ☐ Iron
- ☐ Potassium
- ☒ Sodium

9. The purple flame is observed on burning which metal ?

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- ☒ Potassium
- ☐ Calcium
- ☐ Barium
- ☐ Strontium

10. In the context of redox reaction the removal of hydrogen from a substance is known as ____.

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- ☒ Oxidation
- ☐ Dehydration
- ☐ Dehydrogenation
- ☐ Reduction

11. In the context of redox reaction the removal of oxygen from a substance is known as ____.

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- ☒ Reduction
- ☐ Dehydration
- ☐ Dehydrogenation
- ☐ Oxidation

12. Dissolving sugar is an example of

2

- ☒ Physical Change
- ☐ Chemical Change
- ☐ Redox Reaction
- ☐ None of these

13. $\text{CuSO}_4 + \text{Zn} \rightarrow \text{Cu} + \text{ZnSO}_4$ reaction is an example of a:

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- ☐ Double displacement reaction
- ☒ Displacement reaction
- ☐ Combination reaction
- ☐ Decomposition reaction

14. What happens when dilute hydrochloric acid is added to Zn Granules ?

2

- ☐ Zinc salt and water are produced
- ☐ No reactions takes place
- ☒ Hydrogen gas and Zinc chloride are produced
- ☐ Chlorine gas and Zinc hydroxide are produced

**15. Translate the following statements into chemical equation and then balance it.
Barium chloride reacts with aluminium sulphate to give aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.**

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- ☐ $\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow \text{AlCl}_3 + \text{BaSO}_4$
- ☒ $3\text{BaCl}_2 + \text{Al}_2(\text{SO}_4)_3 \rightarrow 2\text{AlCl}_3 + 3\text{BaSO}_4$
- ☐ $3\text{BaCl}_2 + 2\text{Al}_2(\text{SO}_4)_3 \rightarrow 3\text{AlCl}_3 + 4\text{BaSO}_4$
- ☐ None of above



16. Identify the type of reaction in each case a. Zinc Carbonate (s) → Zinc Oxide (s) + Carbon dioxide (g) b. Hydrogen (g) + Chlorine (g) → Hydrogen Chloride (g)

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- ☐ Thermal Decomposition , Combination reaction
- ☒ Decomposition, Redox Reaction + Combination reaction
- ☐ Displacement , Combination reaction
- ☐ None of Above

17. The balancing equations is in accordance with of chemical :

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- ☐ Law of Combining Volumes
- ☐ Law of Constant Proportions
- ☒ Law of Conservation of mass
- ☐ Both B and C

18. What type of reaction is respiration

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- ☒ Exothermic reaction
- ☐ Endothermic reaction
- ☐ Reduction reaction
- ☐ Combination reaction

19. A solution of a substance 'X' is used for white washing. Name the substance 'X' and write its chemical formula.

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- ☐ Lime Stone, CaCO_3
- ☐ Lime, CaCO_3
- ☒ Calcium Oxide, CaO
- ☐ Calcium Carbonate, CaCO_3

20. Write the balanced reaction of Calcium Oxide with water and state what type of reaction is this.

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- ☐ $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{CaOH} + \text{H}_2$, displacement
- ☒ $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}$, combination reaction
- ☐ $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$, decomposition reaction
- ☐ $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{CaOH}$, Combination reaction

21. The reaction in which two compounds exchange their ions to form two new compounds

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- ☐ a displacement reaction
- ☐ a decomposition reaction
- ☐ an isomerization reaction
- ☒ a double displacement reaction

22. When green coloured ferrous sulphate crystals are heated, the colour of the crystal changes because

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- ☐ It is decomposed to ferric oxide
- ☒ It loses water of crystallisation
- ☐ It forms SO_3
- ☐ it forms SO_2



23. A compound used for white washing is

- ☒ Quick lime ☐ Slaked Lime ☐ Blue Vitriol ☐ Limestone

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24. Color of Magnesium oxide is

- ☒ White ☐ Blue ☐ Grey ☐ Pink

2

25. A substance x is an oxide of an group 2 element is used in cement industry. On treatment with water it forms solution which turns red litmus to blue. Identify X ?

- ☐ Slaked Lime ☒ Quick lime ☐ Silver Sulphide ☐ Limestone

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26. Which of the following is true for an unbalanced chemical equation ?

- ☐ Number of atom is equal on both sides of the equation
☐ Number of atoms is less on the left side of the equation
☐ Number of atoms is more on the right side of the equation
☒ Both B and C

2

27. Which reactant is reduced in given reaction $\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$

- ☒ Copper Oxide ☐ Oxygen ☐ Hydrogen ☐ None of Above

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28. Which of the following does not involve a chemical reaction ?

- ☐ Digestion of food in our body
☐ Process of Respiration
☐ Burning of candle wax when heated
☒ Melting of candle wax on heating

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29. The neutralization reaction between an acid and a base is a type of

- ☒ double displacement reaction
☐ displacement reaction
☐ addition reaction
☐ Decomposition reaction

2

30. The neutralization reaction between an acid and base is a type of

- ☐ Endothermic ☒ Exothermic ☐ Amphoteric ☐ None of Above

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31. Which of the following statement about the reaction below are incorrect ? $2\text{PbO(s)} + \text{C(s)} \rightarrow 2\text{Pb(s)} + \text{CO}_2\text{(g)}$ 1. lead is getting reduced 2. Carbon dioxide is getting oxidised 3. Carbon is getting oxidised 4. Carbon is getting oxidised

- ☒ 1 and 2 ☐ 1 and 3 ☐ 1, 2 and 3 ☐ all of above

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32. On immersing an iron nail in CuSO_4 solution for a few minutes, you will observe

- ☐ No reaction takes place
☒ The color of solution fades away
☐ The Surface of iron nails acquire a black coating
☐ The color of solution changes to green

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33. Which of the following is not physical change ?

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- ☐ Boiling of water to give water vapour
- ☐ Melting of ice to give water
- ☐ Dissolution of salt in water
- ☒ Combustion of Liquefied Petroleum Gas (LPG)

34. We store silver chloride in a dark coloured bottle because it is

2

- ☐ a white solid
- ☐ undergoes redox reaction
- ☒ to avoid action by sunlight
- ☐ none of above

35. In a chemical reaction between sulphuric acid and barium chloride solution the white precipitates formed are of :

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- ☐ HCL ☒ BaSO₄ ☐ SO₄ ☐ CL

36. A chemical reaction does not involve

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- ☐ Formation of new substances entirely different properties than that of the reactants
- ☐ Breaking of old chemical bonds and formations of new chemical bonds.
- ☐ Rearrangement of the atoms of reactants to form new products
- ☒ Changing of atom of one element into those of another element to form new products.

37. The displacement reaction between iron (III) oxide and a metal X is used for welding the rail tracks. Here X is :

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- ☐ Copper granules ☐ Sodium pellets ☒ Aluminium dust ☐ Magnesium ribbon

38. When ferrous sulphate is heated strongly it undergoes decomposition to form ferric oxide as a main product accompanied by a change in color form

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- ☐ Blue to Green ☒ Green to Brown ☐ Green to Yellow ☐ Brown to Green

39. Before burning in air, the magnesium ribbon is cleaned by rubbing with a sand paper to :

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- ☐ Make the ribbon surface shinier
- ☒ Remove the layer of magnesium oxide from the ribbon surface
- ☐ Remove the layer of magnesium carbonate from the ribbon surface
- ☐ Remove the moisture from the ribbon surface

40. Oxidation is a process which involves

2

- ☒ addition of oxygen
- ☐ addition of hydrogen
- ☐ removal of oxygen
- ☐ removal of hydrogen



41. Reduction is a process which involves

2

- ☐ addition of hydrogen
- ☒ removal of oxygen
- ☐ removal of hydrogen
- ☐ addition of oxygen

42. In an electrolytic cell where electrolysis is carried, anode has:

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- ☒ Positive charge
- ☐ Negative Charge
- ☐ Connected to negative terminal of the battery
- ☐ None of these is correct

43. To indicate the presence of gaseous reactants or product, we use the symbol

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- ☒ (Product)g or (Reactant)g
- ☐ (Product)- or (Reactant)-
- ☐ (Product). or (reactant).
- ☐ Both (a) and (b)

44. Which of the following is a physical change ?

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- ☐ Formation of curd from milk
- ☐ Ripening of fruits
- ☒ Getting salt from sea water
- ☐ Burning of wood

45. Silver article turns black when kept in the open for a few days due to formation of

2

- ☐ H₂S ☐ AgS ☐ AgSO₄ ☒ Ag₂S

46. Which of the following is not a characteristic of a chemical reaction ?

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- ☐ Change in state
- ☐ Change in temperature
- ☐ Evolution of gas
- ☒ Evolution of liquid

47. Chemical formula of marble

2

- ☐ CaO ☐ Ca(OH)₂ ☐ Mg(OH)₂ ☒ CaCO₃

48. $a\text{Mg}_3\text{N}_2 + b\text{H}_2\text{O} \rightarrow c\text{Mg(OH)}_2 + d\text{NH}_3$ when the equation is balanced, the coefficients b, c and d respectively are -

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- ☒ 1, 6, 3, 2 ☐ 1, 3, 3, 2 ☐ 1, 2, 1, 3 ☐ 2, 3, 6, 2

49. In the reaction $x\text{Pb(NO}_3)_2 \rightarrow y\text{PbO(s)} + z\text{NO}_2\text{(g)} + \text{O}_2\text{(g)}$ Values of x, y and z respectively are

2

- ☐ 1, 1, 2 ☒ 2, 2, 4 ☐ 1, 2, 4 ☐ 4, 2, 2

50. In the balanced equation $\text{Na}_2\text{CO}_3 + x\text{HCl} \rightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$. The value of x is

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- ☐ 1 ☒ 2 ☐ 3 ☐ 4



51. Lead nitrate $\text{Pb}(\text{NO}_3)_2$, on heating forms Lead oxide (PbO) solid and Nitrogen dioxide gas. What are the color of lead oxide and nitrogen dioxide ?

- ☐ White, Colourless ☐ White, Brown ☒ Yellow, Brown ☐ Yellow, Colourless

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52. One of the following is an endothermic reaction. This is

- ☐ Combination of carbon and oxygen to form carbon monoxide
☒ Combination of nitrogen and oxygen to form nitrogen monoxide
☐ Combination of glucose and oxygen to form carbon dioxide and water
☐ Combination of zinc and hcl form zinc chloride and hydrogen

2

53. Name of the products formed when iron fillings are heated with dillute hydrochloric acid

- ☐ Fe (III) chloride and water
☐ Fe (II) chloride and water
☒ Fe (II) chloride and hydrogen gas
☐ Fe (III) chloride and hydrogen gas

2

54. A reaction of hydrogen with water to form water is

- ☐ Endothermic reaction
☒ Exothermic reaction
☐ Decomposition reaction
☐ Reaction not feasible

2

55. What is observed when a solution of potassium Iodide is added to silver nitrate solution ?

- ☐ No reaction takes place
☐ White precipitate of silver iodide is formed
☒ yellow precipitate of AgI is formed
☐ AgI is soluble in water

2

56. Give the ratio in which hydrogen and oxygen are present in water by volume.

- ☐ 1:2 ☐ 1:1 ☒ 2:1 ☐ 1:8

2

57. To facilitate the electrolysis of water we add a few drops of acids like sulfuric acid or salts like NaCl because :

- ☐ It acts as a catalyst
☐ It prevents the decomposition of electrodes used
☒ It increase the electrical conductivity of water
☐ None

2

58. Which of the following is a displacement reaction ?

- ☐ $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4$
☐ $\text{BaCl}_2 (\text{aq}) + \text{Na}_2\text{SO}_4 (\text{aq}) \rightarrow \text{BaSO}_4 (\text{s}) + 2\text{NaCl}(\text{aq})$
☐ $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
☒ $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$

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59. Which one is not type of decomposition reaction ?

- ☐ Heat ☐ Electricity ☐ Light ☒ Water

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60. Complete the following decomposition reaction $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{X} + \text{Y}$

- ☐ CO_2, CO ☐ NO_2, NO ☐ $\text{H}_2\text{O}, \text{H}_2$ ☒ SO_2, SO_3

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61. Which reaction is not a characteristic of a chemical change

- ☐ $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}_2$ ☒ $\text{Au} + \text{H}_2\text{O} \rightarrow \text{Au}(\text{OH})_2$ ☐ $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ ☐ None of above

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62. Which is not a type of chemical reaction

- ☐ combination ☐ displacement ☐ decomposition ☒ None of Above

2

63. Burning of Coal is

- ☐ Displacement ☐ Decomposition ☒ Combination ☐ All of Above

2

64. An example of exothermic reaction is

- ☒ $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$ ☐ $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ ☐ $4\text{Fe} + 3\text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$ ☐ None

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65. Symbol Δ used while representing some chemical changes stands for

- ☐ Light ☒ Heat ☐ Catalysts ☐ Pressure

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66. Which of the following statements is/are correct ?

- ☐ A chemical equation tells us about the substances involved in a reaction
☐ A chemical equation informs us about the symbols and formulae of the substances involved in a reaction
☐ A chemical equation tells about the atoms or molecules of the reactants and products in a reaction
☒ All of Above

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67. Which of the following is a combustion reaction

- ☒ Burning of Petrol ☐ Boiling of water ☐ Melting of wax ☐ None of these

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68. Neutralization reaction is an example of

- ☒ exothermic reaction ☐ endothermic reaction ☐ oxidation ☐ None of these

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69. Which of the following reactions involves the combination of two elements ?

- ☐ $\text{CaCO}_3 + \text{CO}_2 \rightarrow \text{CaCO}_3$
☒ $4\text{Na} + \text{O}_2 \rightarrow 2\text{Na}_2\text{O}$
☐ $\text{SO}_2 + \frac{1}{2}\text{O}_2 \rightarrow \text{SO}_3$
☐ $\text{NH}_3 + \text{HCl} \rightarrow \text{NH}_4\text{Cl}$

2

