RAVI MATHS TUITION CENTER , CHENNAI- 82. WHATSAPP - 8056206308

Chemical Reactions And Equations MCQ TEST

10th Standard

Science

82 x 1 = 82

1) Which of the statements about the reaction below are incorrect?
$2PbO(s) + C(s) \rightarrow 2Pb(s) + CO_2(s)$
(a) Lead is getting reduced
(b) Carbon dioxide is getting oxidized
(c) Carbon is getting oxidized
(d) Lead oxide is getting reduced.

(a) (a) and (b) (b) (a) and (c) (c) (a), (b) and (c) (d) All of these

2) $Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$.
The reaction is an example of a

(a) Combination of reaction (b) Double displacement reaction (c) Decomposition reaction
(d) Displacement reaction.

3) What happens when dilute hydrochloric acid is added to iron fillings? Tick the correct answer

(a) Hydrogen gas and Iron chloride are produced.
(b) Chloride gas and Iron hydroxide are produced. (c) No reaction takes place
(d) Iron salt and water are produced

4) Which of the following is not a physical change?

(a) Boiling of water to give water vapour. (b) Melting of ice to give water.
(c) Dissolution of salt in water. (d) Combustion of Liquefied Petroleum Gas(LPG).

5) The following reaction: $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$ is an example of a
(i) displacement reaction
(ii) combination reaction
(iii) redox reaction
(iv) neutralisation reaction

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

6) Which of the following statements about the given reaction are correct?
$3Fe(s) + 4H_2O(g) \rightarrow Fe_3O_4(s) + 4H_2(g)$
(i) Iron metal is getting oxidised
(ii) Water is getting reduced
(iii) Water is acting as reducing agent
(iv) Water is acting as oxidising agent

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

7) Which of the following are exothermic processes?
(i) Reaction of water with quicklime
(ii) Dilution of an acid
(iii) Evaporation of water
(iv) Sublimation of camphor(crystals)

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

8) Three beakers labelled as A, B and C each containing 25 mL of water was taken. A small amount of NaOH, anhydrous $CuSO_4$ and NaCl were added to the beakers A, B and C respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers A and B, whereas in case of beaker C, the temperature of the solution falls. Which one of the following statement(s) is (are) correct?
(i) In beakers A and B, exothermic process has occurred.
(ii) In beakers A and B, endothermic process has occurred.
(iii) In beaker C exothermic process has occurred.
(iv) In beaker C endothermic process has occured.

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

9) A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light purple colour of the solution fades and finally disappears. Which of the following is the correct explanation for the observation?

(a) $KMnO_4$ is an oxidising agent, it oxidises $FeSO_4$

(b) $FeSO_4$ acts as an oxidising agent and oxidises $KMnO_4$

(c) The colour disappears due to dilution; no reaction is involved

(d) $KMnO_4$ is an unstable compound and decomposes in presence of $FeSO_4$ to a colourless compound.

10) Which among the following is /are double displacement reaction(s) ?
(i) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$
(ii) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$
(iii) $C + O_2 \rightarrow CO_2$
(iv) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

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

11) Which among the following statement(s) is (are) true? Exposure of silver chloride to sunlight for a long duration turns grey due to
(i) the formation of silver by decomposition of silver chloride
(ii) sublimation of silver chloride
(iii) decomposition of chlorine gas from silver chloride
(iv) oxidation of silver chloride

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

12) Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime and the solution formed?
(i) It is an endothermic reaction
(ii) It is an exothermic reaction
(iii) The pH of the resulting solution will be more than seven
((iv) The pH of the resulting solution will be less than seven

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

13) Barium chloride on reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?
(i) Displacement reaction
(ii) Precipitation reaction
(iii) Combination reaction
(iv) Double displacement reaction

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

14) Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is

(a) 1 : 1 (b) 2 : 1 (c) 4 : 1 (d) 1 : 2

15) Which of the following is (are) an endothermic process (es)?
(i) Dilution of sulphuric acid
(ii) Sublimation of dry ice
(iii) Condensation of water vapours
(iv) Evaporation of water

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

16) In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, a yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of lead nitrate?

(a) Lead sulphate (insoluble) (b) Ammonium nitrate (c) Lead acetate

(d) Potassium sulphate

17) Which of the following gases can be used for storage of fresh sample of an oil for a long time?

(a) Carbon dioxide or oxygen (b) Carbon dioxide or helium (c) Nitrogen or oxygen

(d) Helium or nitrogen

18) The following reaction is used for the preparation of oxygen gas in the laboratory

$2KClO_3(s) \xrightarrow[Catalyst]{Heat} 2KCl + 3O_2(g)$

Which of the following statement(s) is (are) correct about the reaction?

(a) It is a decomposition reaction and endothermic in nature (b) It is a combination reaction

(c) It is a decomposition reaction and accompanied by release of heat

(d) It is a photochemical decomposition reaction and exothermic in nature

19) Which one of the following processes involves chemical reactions?

(a) Storing of oxygen gas under pressure in a gas cylinder. (b) Liquefaction of air.

(c) Keeping petrol in a china dish in the open.

(d) Heating copper wire in presence of air at high temperature.

20) In which of the following chemical equations, the abbreviations represent the correct states of the reactants and products involved temperature?

(a) $2H_2(l) + O_2(l) \rightarrow 2H_2O(g)$ (b) $2H_2(g) + O_2(l) \rightarrow 2H_2O(l)$ (c) $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$

(d) $2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$

21) Which of the following are combination reactions?

(i) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$
(ii) $MgO + H_2O \rightarrow Mg(OH)_2$
(iii) $4Al + 3O_2 \rightarrow 2Al_2O_3$
(iv) $Zn + FeSO_4 \rightarrow ZnSO_4 + Fe$

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

22) The chemical formula of lead sulphate is

(a) $PbSO_4$ (b) $PB(SO_4)_2$ (c) $Pb_2(SO_4)_3$ (d) Pb_2SO_4

23) In the reaction, $SO_2(g) + 2H_2S(g) \rightarrow 2H_2O(l) + S(s)$, the reducing agent is

(a) SO_2 (b) H_2S (c) H_2O (d) S

24) Chemically rust is

(a) only ferric oxide (b) hydrated ferrous oxide (c) hydrated ferric oxide (d) none of these

25) Both CO_2 and H_2 gases are

(a) colourless (b) acidic in nature (c) soluble in water (d) heavier than air

26) Methane on combustion gives

(a) neither CO_2 nor H_2O (b) CO_2 (c) both CO_2 and H_2O (d) H_2O

27) Fatty foods become rancid due to the process of

(a) corrosion (b) reduction (c) hydrogenation (d) oxidation

28) We store silver chloride in a dark coloured bottle because it is

(a) a white solid (b) to avoid action by sunlight (c) undergoes redox reaction

(d) none of the above

29) Which of the following will be required to identify the gas evolved when dilute hydrochloric acid reacts with zinc metal?

(a) Red litmus paper (b) A burning splinter (c) Lime water (d) PH paper

30) When a magnesium ribbon is burnt in air, the ash formed is

(a) pink (b) white (c) black (d) yellow

31) The reaction of H_2 gas with oxygen gas to form water is an example of

(a) redox reaction (b) combination reaction (c) exothermic reaction

(d) all of these reactions

32) Which information is not conveyed by a balanced chemical equation?

(a) Physical states of reactants and products

(b) Symbols and formulae of all the substances involved in a particular reaction

(c) Number of atoms/molecules of the reactants and products formed

(d) Whether a particular reaction is actually feasible or not

33) The electrolytic decomposition of water gives H_2 and O_2 in the ratio of

(a) 1 : 2 by volume (b) 2 : 1 by volume (c) 8 : 1 by mass (d) 1 : 2 by mass

34) In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is

(a) 1 (b) 2 (c) 3 (d) 4

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

(a) H_2S (b) AgS (c) $AgSO_4$ (d) Ag_2S

36) When crystals of lead nitrate are heated strongly in a dry test tube

(a) crystals immediately melt (b) a brown residue is left (c) white fumes appear in the tube

(d) a yellow residue is left

37) Dilute hydrochloric acid is added to granulated zinc taken in a test tube. The following observations are recorded. Point out the correct observation

(a) The surface of metal becomes shining (b) The reaction mixture turns milky

(c) Odour of a pungent smelling gas is recorded (d) A colourless and odourless gas is evolved

38) When carbon dioxide is passed through lime water

(a) calcium hydroxide is formed (b) white precipitate of CaO is formed

(c) lime water turns milky (d) colour of lime water disappears

39) In which of the following, heat energy will be evolved?

(a) Electrolysis of water (b) Dissolution of NH4Cl in water (c) Burning of L.P.G

(d) Decomposition of AgBr in the presence of sunlight

40) Rancidity can be prevented by

(a) adding antioxidants (b) storing food away from light (c) keeping food in refrigerator

(d) all of these

41) The reaction in which two compound exchange their ions to form two new compounds is called

(a) displacement reaction (b) combination reaction (c) double displacement reaction

(d) redox reaction

42) On immersing an iron nail in $CuSO_4$ solution for few minutes, you will observe

(a) no reaction takes place (b) the colour of solution fades away

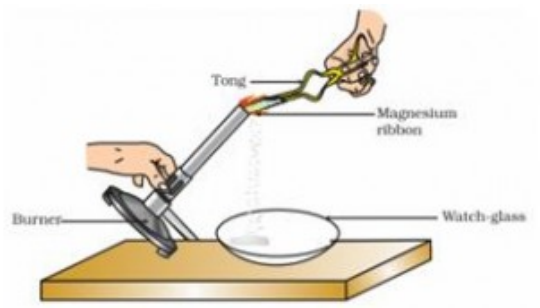
(c) the surface of iron nails acquire a black coating

(d) the colour of solution changes to green

43) An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substance X and Y are

(a) X = Fe, Y = Fe_2O_3 (b) X = Ag, Y = Ag_2S (c) X = Cu, Y = CuO (d) X = Al, Y = Al_2O_3

44)



A magnesium ribbon is burnt in air. A student made the following observations
i. Magnesium ribbon undergoes oxidation reaction.
ii. Magnesium reacts with air to form magnesium oxide.
iii. Magnesium ribbon undergoes decomposition reaction.

(a) (ii) and (iii) (b) (i) and (iii) (c) (i), (ii) and (iii) (d) (i) and (ii)

45) Reaction between Ammonium chloride and Barium hydroxide is

(a) Exothermic reaction (b) Chemical change (c) Endothermic reaction (d) None of these

46) Physical changes are accompanied by:

(a) Evolution of hydrogen gas (b) Change in state (c) Formation of a new yellow precipitate

(d) Formation of a new compound

47) In a reaction between zinc and hydrochloric acid, the changes accompanying a reaction are:

(a) Evolution of gas and heat (b) Evolution of steam (c) Formation of precipitate

(d) Formation of dazzling white light

48) If reaction between nitrogen and hydrogen to form ammonia is exothermic, then it will be accompanied by

(a)

49) Change in state (b) Change in colour (c) Evolution of heat (d) Formation of precipitate

50) During an exothermic reaction

(a) Heat is absorbed (b) There is no heat transfer (c) Heat can either be absorbed or evolved

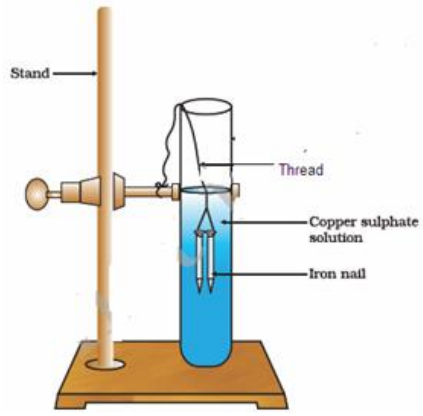
(d) Heat is evolved.

51) The reactions in which precipitate is formed are known as

(a) Exothermic reactions (b) Endothermic reactions (c) Precipitation reactions

(d) Combustion reactions

52) As seen in the figure, two nails are carefully dipped in copper sulphate solution with the help of threads. What will happen when the nails are removed after half an hour?



(a) No change is observed (b) Nails turn blue in colour (c) Nails turn green in colour
(d) Nails turn brown in colour

53) An example of a chemical reaction in which heat is evolved is

(a) Reaction between sodium and water
(b) Reaction between lead nitrate and potassium iodide (c) Boiling of water
(d) Ammonium chloride and Barium hydroxide

54) An example of reaction in which gas is evolved is

(a) Reaction between limestone and HCl (b) Burning of magnesium ribbon in air
(c) Reaction between Calcium oxide and water
(d) Reaction between lead nitrate and potassium iodide

55) Freezing of water is a

(a) Physical change (b) Chemical change (c) Both physical and chemical change
(d) Exothermic reaction

56) An example of reaction in which precipitate is formed is:

(a) Reaction between hydrogen and oxygen
(b) Reaction between lead nitrate and potassium iodide
(c) Reaction between hydrochloric acid and zinc (d) Reaction between sodium and water

57) An example of a physical change is

(a) Burning of coal (b) Boiling of water (c) Reaction between lime and water
(d) Burning of magnesium ribbon

58) The preparation of water from hydrogen and oxygen gas is accompanied by:

(a) Evolution of coloured gas (b) Formation of precipitate (c) Formation of ashes
(d) Change in state

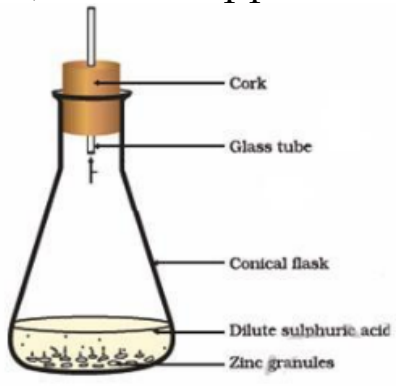
59) Which of the following feature is common to both physical and chemical change?

(a) Evolution of hydrogen gas (b) Formation of new precipitate
(c) Evolution of carbon dioxide (d) Change in state and colour

60) A drop of colourless liquid is poured over blue litmus paper and it turns to red. The colourless liquid is

(a) sodium chloride solution (b) pure water (c) potassium hydroxide solution
(d) dilute hydrochloric acid

61) What happens when dilute sulphuric acid is added to zinc granules? Select the correct option



(a) Water and zinc sulphate is formed (b) No reaction takes place

(c) Hydrogen and zinc sulphate is formed (d) Hydrogen gas and zinc sulphide is formed.

62) Dissolving of quick lime in water is accompanied by

(a) Formation of precipitate (b) Evolution of heat (c) Change in colour (d) Change in state

63) Setting of cement is an example of

(a) Physical change (b) Precipitation reaction (c) Endothermic reaction

(d) Exothermic reaction

64) The symbol used to denote a liquid reactant or product in a reaction is

(a) (s) (b) (aq) (c) (g) (d) (l)

65) Select the chemical equation which is unbalanced

(a) $NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$ (b) $CuSO_4 + H_2S \rightarrow H_4SO_2 + CuS$

(c) $2FeCl_3 + H_2S \rightarrow 2FeCl_2 + 2HCl + S$ (d) $2Mg + CO_2 \rightarrow 2MgO + C$

66) The substances that are formed after completion of the reaction are called

(a) Catalysts (b) Reactants (c) Reagents (d) Products

67) Which of the following equation is balanced?

(a) $H_2 + N_2 \rightarrow NH_3$ (b) $Cl_2 + H_2 \rightarrow HCl$ (c) $CH_4 + O_2 \rightarrow CO_2 + H_2O$ (d) $C + O_2 \rightarrow CO_2$

68) Which one of the following reaction is not balanced?

(a) $CaCO_3 \rightarrow CaO + CO_2$ (b) $2KI + H_2O_2 \rightarrow 2KOH + I_2$ (c) $Mg + 2HCl \rightarrow MgCl_2 + H_2$

(d) $2Fe + 3H_2O \rightarrow Fe_2O_3 + H_2$

69) The balanced chemical equation for the reaction of zinc metal with hydrochloric acid is

(a) $Zn + HCl \rightarrow ZnCl + H_2$ (b) $Zn + HCl \rightarrow ZnCl_2 + H_2$ (c) $Zn + 2HCl \rightarrow 2ZnCl_2 + H_2$

(d) $Zn + 2HCl \rightarrow ZnCl_2 + H_2$

70) In the equation $N_2 + aH_2 \rightarrow bNH_3$, what will be the value of a and b?

(a) a=2 ; b=3 (b) a=3 ; b=2 (c) a=2 ; b=2 (d) a=3 ; b=3

71) $NH_4OH + FeCl_3 \rightarrow NH_4Cl + Fe(OH)_3$

To balance the above equation, the coefficient for ammonium hydroxide and ammonium chloride will be:

(a) 3 and 3 (b) 3 and 1 (c) 3 and 2 (d) 2 and 3

72) Which atom is balanced in the given equation?

$4P + O_2 \rightarrow 2P_2O_5$

(a) Phosphorus (b) Oxygen (c) Both Phosphorus and oxygen

(d) Neither Phosphorus nor oxygen

73) Which of the following statement is true for a balanced chemical equation?

(a) Number of atoms of each element are equal on both the sides

(b) Law of conservation of mass holds true

(c) Law of conservation of mass does not hold true (d) Both A and B

74) 10 g of hydrogen is burnt in the presence of excess oxygen. The mass of water formed is

(a) 90 g (b) 45 g (c) 10 g (d) 18 g

75) In the reaction, $3O_2(g) + 2H_2S(g) \rightarrow 2H_2O(l) + 2SO_2(g)$, the reducing agent is

(a) O_2 (b) H_2O (c) H_2S (d) SO_2

76) The following reaction is an example of

$4NH_3(g) + SO_2(g) \longrightarrow 4NO(g) + 6H_2O(g)$

(i) displacement reaction
(ii) combustion reaction
(iii) redox reaction
(iv) neutralisation reaction

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

77) Reddish-brown copper metal forms a black solid on combustion. Which of the following statement is incorrect?

(a) Black solid is CuO (b) The reaction is a redox reaction

(c) The reaction is a precipitation reaction . (d) Copper is being oxidised.

78) Which of the following reaction is used in white washing of walls?

(a) $2Ca + O_2 \longrightarrow 2CaO$ (b) $CaO + H_2O \longrightarrow Ca(OH)_2 + \triangle$

(c) $Ca(OH)_2 + CO_2 \longrightarrow CaCO_3 + H_2O$ (d) $Ca(OH)_2 \xrightarrow{\triangle} CaO + H_2O$

79) Based on the reaction given below, what is the correct increasing order of reactivity of metals?

(i) $Fe(s) + CuSO_4(aq) \longrightarrow FeSO_4(aq) + Cu(s)$
(ii) $Cu(s) + FeSO_4(aq) \longrightarrow$ No reaction
(iii) $Cu(s) + 2AgNO_3(aq) \longrightarrow Cu(NO_3)_2(aq) + 2Ag(s)$
(iv) $2Ag(s) + Cu(NO_3)_2(aq) \longrightarrow$ No reaction

(a) Ag < Cu < Fe (b) Ag < Fe < Cu (c) Fe < Cu < Ag (d) Cu < Ag < Fe

80) Identify the following type of reaction:

$$2KClO_3 \xrightarrow[catalyst]{heat} 2KCl(s) + 3O_2(g)$$

(a) It is a combination reaction.

(b) It is a decomposition reaction and is accompanied by release of heat

(c) It is a photochemical decomposition reaction and exothermic in nature.

(d) It is a decomposition reaction and is endothermic in nature

81) What is true about the following equation?

$3Fe(s) + 4H_2O(g) \longrightarrow Fe_3O_4(s) + 4H_2(g)$

(i) Iron metal is being oxidised
(ii) Water is being reduced
(iii) Water is acting as reducing agent
(iv) Water is acting as oxidising agent

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

82) Which of the following is not an example of single displacement reaction

(a) $CuO + H_2 \longrightarrow H_2O + Cu$ (b) $Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu$

(c) $4NH_3 + 5O_2 \longrightarrow 4NO + 6H_2O$ (d) $Zn + 2HCl \longrightarrow H_2 + ZnCl_2$

83) In the reaction CuO + H_2 →Cu + H2O, the correct statement is

(a) CuO is an oxidising agent (b) H_2 is getting oxidised

(c) The reaction is a displacement reaction (d) All of these

28 x 1 = 28

84) **Assertion:** Ferrous sulphate crystals ($FeSO_4 \cdot 7H_2O$) lose water when heated.
Reason: The colour of the crystals changes and it is a decomposition reaction.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

85) **Assertion:** The chemical equation is always balanced.
Reason: The total mass of elements before reaction should be equal to the total mass of elements after reaction.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

86) **Assertion:** Reaction of calcium oxide and water is exothermic.
Reason: Calcium oxide and water combine to form a single product, calcium hydroxide.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

87) **Assertion:** White silver chloride turns grey in sunlight
Reason: In sunlight, silver chloride reacts with oxygen to form silver oxide.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

88) **Assertion:** If a substance gains oxygen during a reaction, it is said to be oxidised.
Reason: If a substance loses oxygen during a reaction, it is said to be reduced.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

89) **Assertion:** Chemical reaction in test tube concluded with the fall in the temperature of the reaction.
Reason: The reaction has absorbed heat from surroundings and is called exothermic reaction.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

90) **Assertion:** Reactant X reacts with other reactant Y to give blue colour precipitate.
Reason: In this reaction, physical properties of the reactants have changed.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

91) **Assertion:** $CO + 2H_2 \xrightarrow[\triangle]{340\ atm} CH_3OH(l)$
Reason: It is a combination reaction because CO combines with H_2 to form CH_3OH i.e., two substances combine to form a single compound.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

92) **Assertion:** In the reaction,$Zn_{(s)} + 2H^+_{(aq)} \rightarrow Zn^{2+}_{(aq)} + H_{2(g)}$ ' zinc acts as an oxidising agent and H^+ acts as a reducing agent.
Reason: An oxidising agent accepts electrons while a reducing agent loses electrons.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

93) **Assertion:** $2H_2\ S_{(g)} + O_{2(g)} \longrightarrow 2\ S_{(s)} + 2H_2O_{(l)}$
It is a redox reaction.
Reason: In redox reaction, oxidation and reduction take place simultaneously.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

94) **Assertion**: The reaction during which hydrogen is lost is called oxidation reaction.
Reason: Reducing agent removes hydrogen from another substance.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

95) **Assertion**: $MnO_2 + 4HCl \longrightarrow MnCl_2 + Cl_2 + 2H_2O,$ is a redox reaction.
Reason: MnO_2 oxidises HCl to $C1_2$ and gets reduced to $MnC1_2$
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

96) **Assertion**: Magnesium wire burns in presence of O_2.
Reason: Magnesium acts as a reducing agent
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

97) **Assertion:** Corrosion of iron is commonly known as rusting.
Reason: Corrosion of iron occurs in presence of moist air.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

98) **Assertion:** Food materials are often packed in air tight container.
Reason: Oxidation, resulting in rancidity, is prevented
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

99) **Assertion:** The food items containing oil and fat are flushed with nitrogen.
Reason: Oil and fat become rancid on oxidation which has the bad taste and smell.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

100) **Assertion:** Following reaction describes the rusting of iron and is a redox reaction
$4Fe + 3O_2 \rightarrow 4Fe^{3+} + 6O^{2-}$
Reason: The metallic iron is oxidised to Fe^{3+}.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

101) **Assertion:** Iron articles are painted so as to prevent them from rusting.
Reason: When the surface of iron is coated with paint, its surface does not come in contact with oxygen and moisture therefore rusting does not take place.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

102) **Assertion:** Chemical reaction changes the physical and chemical state of a substance.
Reason: When electric current is passed through water (liquid), it decomposes to produce hydrogen and oxygen gases
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

103) **Assertion**: In a balanced chemical equation, total mass of the reactants is equal to the total mass of the products.
Reason: Mass can neither be created nor destroyed during a chemical change.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

104) **Assertion:** When calcium carbonate is heated, it decomposes to give calcium oxide and carbon dioxide.
Reason: The decomposition reaction takes place on application of heat, therefore, it is an endothermic reaction.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

105) **Assertion:** Chips manufacturers usually flush bags of chips with gas such as nitrogen to prevent the chips from getting oxidised.
Reason: This increase the taste of the chips and helps in their digestion.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

106) **Assertion:** Rusting of iron metal is the most common form of corrosion.
Reason: The effect of rusting of iron can be reversed if they are left open in sunlight.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

107) **Assertion:** AgBr is used on photographic and X-ray film.
Reason: AgBr is photosensitive and changes to Ag and bromine in presence of sunlight and undergoes decomposition reaction
Codes.
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

108) **Assertion**: Magnesium ribbon keeps on burning in atmosphere of nitrogen.
Reason: Magnesium reacts with nitrogen to form magnesium nitride and this reaction is combination reaction.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

109) **Assertion:** Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas and it is a displacement reaction.
Reason: Zinc reacts with oxygen to form zinc oxide.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

110) **Assertion:** A lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas.
Reason: Lead nitrate reacts with potassium iodide to form yellow ppt of lead iodide and the reaction is double displacement as well as precipitation reaction.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

111) **Assertion**: Exposure of silver chloride to sunlight for a long duration turns grey due to the formation of silver by decomposition of silver chloride.
Reason: In this process, sublimation of silver chloride takes place.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

13 x 4 = 52

112) Chemical equation is a method of representing a chemical reaction with the help of symbols and formulae of the substances involved in it. In a chemical equation, the substances which combine or react are called reactants and new substances produced are called products. A chemical equation is a short hand method of representing a chemical reaction. A balanced chemical equation has equal number of atoms of different elements in the reactants and products side. An unbalanced chemical equation has unequal number of atoms of one or more elements in reactants and products. Formulae of elements and compounds are not changed to balance an equation.

(i) Consider the following reaction:

$pMg_3N_2 + qH_2O \rightarrow rMg(OH)_2 + sNH_3$

When the equation is balanced, the coefficients p, q, r, s respectively are

(a) 1,3,3,2 **(b) 1,6,3,2**

(c) 1,2,3,2 **(d) 2,3,6, 2**

(ii) Which of the following information is not conveyed by a balanced chemical equation?

(a) Physical states of reactants and products

(b) Symbols and formulae of all the substances involved in a particular reaction

(c) Number of atoms/molecules of the reactants and products formed

(d) Whether a particular reaction is actually feasible or not

(iii) The balancing of chemical equations is in accordance with

(a) law of combining volumes

(b) law of constant proportions

(c) law of conservation of mass

(d) both (b) and (c)

(iv) Which of the following chemical equations is an unbalanced one?

$(a) 2NaHCO_3 \longrightarrow Na_2CO_3 + H_2O + CO_2$

$(b) 2C_4H_{10} + 12O_2 \longrightarrow 8CO_2 + 10H_2O$

$(c)\ 2Al + 6H_2O \longrightarrow 2Al(OH)_3 + 3H_2$

$(d)\ 4NH_3 + 5O_2 \longrightarrow 4NO + 6H_2O$

(v) Which of the following statements is/are correct?

(a) A chemical equation tells us about the substances involved in a reaction.

(b) A chemical equation informs us about the symbols and formulae of the substances involved in a reaction.

(c) A chemical equation tells us about the atoms or molecules of the reactants and products involved in a reaction.

(d) All the above

113) In decomposition reactions, a single reactant breaks down to form two or more products. A decomposition reaction is opposite to combination reaction. Thermal decomposition reactions use the energy in form of heat for the decomposition of reactants. Electrolytic decomposition reactions involve the use of electrical energy for the decomposition of reactant molecules. Photolysis or photochemical decomposition involves the use of light energy for the purpose of decomposition.

(i) Which of the following reactions is a decomposition reaction?

$(a)\ \mathrm{NaOH + HCl \longrightarrow NaCl + H_2O}$ $(b)\ \mathrm{NH_4CNO \longrightarrow H_2NCONH_2}$

$(C)\ \mathrm{2KClO_3 \longrightarrow 2KCl + 3O_2}$ $(d)\ \mathrm{H_2 + I_2 \longrightarrow 2HI}$

$(ii)\ \mathrm{2\,Pb(NO_3)_2 \longrightarrow 2PbO + }nA\mathrm{ + O_2}$

What is nA in the given reaction?

(a) 4NO (b) $4NO_2$ (c) $2PbNO_2$ (d) NO_2

(iii) Amino acid is formed by the decomposition of which component of our diet?

(a)	**(b)**	**(c)**	**(d)**
Carbohydrate	**Starch**	**Protein**	**Fat**

(iv) Silver chloride on exposure to sunlight for a long duration turns grey due to

(I) the formation of silver by decomposition of silver chloride

(II) sublimation of silver chloride

(III) decomposition of chlorine gas from silver chloride

(IV) oxidation of silver chloride

The correct statement(s) is/are

(a) Only (I)	**(b) Only (II) and (III)**	**(c) Only (I) and (II)**	**d) Only (IV)**

(v) What type of chemical reaction takes place when electricity is passed through water?

(a) Thermal decomposition	**(b) Electrolytic decomposition**
(c) Photochemical decomposition	**(d) Displacement reaction**

114) Redox reactions are those reactions in which oxidation and reduction occur Simultaneously. A redox reaction is made up of two half reactions. In the first half reaction, oxidation takes place and in second half reaction, reduction occurs. Oxidation is a process in which a substance loses electrons and in reduction, a substance gains electrons. The substance which gains electrons is reduced and acts as an oxidising agent. On the other hand, a substance which loses electrons is oxidised and acts as a reducing agent.

(i) Which of the following is a redox reaction?

$(a)\ \mathrm{CaCO_3 \rightarrow CaO + CO_2}$ $(b)\ \mathrm{H_2 + Cl_2 \rightarrow 2HCl}$

$(c)\ \mathrm{CaO + 2HCl \rightarrow CaCl_2 + H_2O}$ $(d)\ \mathrm{NaOH + HCl \rightarrow NaCl + H_2O}$

(ii) Identify the reaction in which H2 02 is acting as a reducing agent.

(a) $\mathrm{H_2SO_3 + H_2O_2 \longrightarrow H_2SO_4 + H_2O}$ (b) $\mathrm{2Hl + H_2O_2 \longrightarrow 2H_2O + I_2}$

(c) $\mathrm{Cl_2 + H_2O_2 \longrightarrow 2HCl + O_2}$ (d) $\mathrm{2FeCl_2 + 2HCl + H_2O_2 \longrightarrow 2FeCl_3 + 2H_2O}$

(iii) For the following reactions, identify the one in which H_2S acts as a reducing agent.

(a) $\mathrm{CuSO_4 + H_2\ S \longrightarrow CuS + H_2SO_4}$ (b) $\mathrm{Cd(NO_3)_2 + H_2\ S \longrightarrow CdS + 2HNO_3}$

(c) $\mathrm{2FeCl_3 + H_2\ S \longrightarrow 2FeCl_2 + 2HCl + S}$(d) None of these

(iv) For the following reaction, identify the correct statement.

$\mathrm{ZnO + CO \longrightarrow Zn + CO_2}$

(a) ZnO is being reduced.	**(b) CO_2 is being oxidised**
(c) CO is being reduced.	**(d) ZnO is being oxidised.**

(v) In the following reaction, which substance is reduced?

$\mathrm{PbS + 4H_2O_2 \longrightarrow PbSO_4 + 4H_2O}$

(a) H_2O (b) $H_2\ O_2$ (c) PbS d) $PbSO_4$

115) In a balanced chemical reaction, equal number of atoms are present on both sides of reaction. A balanced chemical reaction is based on law of conservation of mass which means that total mass of reactants and products participating in a reaction must be equal. For example, a balanced chemical equation of burning of magnesium in oxygen to form magnesium oxide is written as :

$2Mg + O_2 \longrightarrow 2MgO$

The mass of reactants (2 x 24 + 32 = 80) is equal to the mass of products [2 x (24 + 16) = 80]

(i) In a reaction, 35 g of reactant, PQ breaks down into 20 g of product, P and an unknown amount of product, Q. Using the law of conservation of mass, weight of products, Q will be

(a) 25g (b) 35g (c) 30g (d) 15g

(ii) When solid mercury (II) oxide is heated, liquid mercury and oxygen gas are produced. Which of the following statements is true regarding the balanced chemical equation for this process?

(a) 1 mole of mercury (II) oxide produces two moles of mercury and one mole of oxygen gas

(b) 2 moles of mercury (II) oxide produce one mole of mercury and one mole of oxygen gas

(c) 1 mole of mercury (II) oxide produces half mole of mercury and half mole of oxygen gas

(d) 2 moles of mercury (II) oxide produce 2 moles of mercury and one mole of oxygen gas

(iii) Which of the following laws is satisfied by a balanced chemical equation?

(a) Law of multiple proportions **(b) Law of conservation of mass**

(c) Law of conservation of motion **(d) Law of conservation of magnetism**

(iv) In the given chemical reaction

$C_6H_{6(l)} + 15O_{2(g)} \longrightarrow mCO_{2(g)} + nH_2O_{(l)}$

The values of m and n are respectively

(a) 14 and 8 **(b) 12 and 6** **(c) 8 and 10** **(d) 12 and 10**

(v) Sulphur dioxide reacts with oxygen to form sulphur trioxide. What would be the molar ratio of sulphur dioxide to sulphur trioxide?

(a) 2: 3 (b) 1: 1 (c) 1: 2 (d) 3: 2

116) In a chemical reaction, reactants are converted into products. The conversion of reactants into products in a chemical reaction is often accompanied by some features which can be observed easily. These easily observed features which take place as a result of chemical reaction are known as characteristics of chemicals reactions. Some important characteristics of chemical reactions are:

(I) Evolution of heat

(II) Formation of precipitate

(III) Change in colour

(IV) Change in temperature

(V) Change in state

Anyone of these general characteristics can tell us whether a chemical reaction has taken place or not.

(i) Reaction of magnesium with air is a/an

(a) exothermic reaction **(b) endothermic reaction**

(c) reversible reaction **(d) substitution reaction**

(ii) In the following reaction

$Ca^{2+}_{(aq)} + 2OH^{-}_{(aq)} \longrightarrow Ca(OH)_{2(s)}$

precipitate of calcium hydroxide will be of

(a) green colour **(b) blue colour** **(c) brown colour** **(d) white colour**

(iii) In the given reaction,

$S_{(s)} + O_{2(g)} \longrightarrow SO_2$

the physical state of SO_2 is

(a) liquid (b) solid (c) gaseous (d) all three

(iv) Which one of the following processes involve chemical reactions?

(a) Storing of oxygen gas under pressure in a gas cylinder.

(b) Keeping petrol in a china dish in the open.

(c) Liquefaction of air.

(d) Heating copper wire in the presence of air at high temperature.

(v) In which of the following reactions, high amount of heat energy will be evolved?

(a) Electrolysis of water **(b) Dissolution of NH4Cl in water**

(c) Burning of L.P.G. **(d) Decomposition of AgBr in the presence of light**

117) A reaction in which two or more reactants combine to form a single product is called a combination reaction. For example, calcium oxide reacts vigorously with water to form calcium hydroxide. The reaction is highly exothermic in nature, as lots of heat is produced during the reaction.

$$CaO_{(s)} + H_2O_{(l)} \longrightarrow Ca(OH)_{2(aq)} + \text{Heat}$$

Calcium oxide Water Calcium hydroxide

Solution of $Ca(OH)_2$ is used for white wash the walls. Calcium hydroxide reacts slowly with carbon dioxide in air to form a thin layer of calcium carbonate on the wall which gives a shiny appearance to wall. Calcium carbonate will form after two or three days of white wash.

(i) What is the chemical name of quick lime?

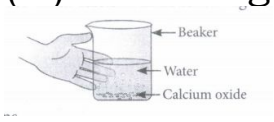
(a) Calcium oxide **(b) Calcium carbonate** **(c) Calcium hydroxide** **(d) Carbon dioxide**

(ii) When carbon dioxide is passed through lime water,

(a) calcium hydroxide is formed **(b) white precipitate of CaO is formed**

(c) lime water turns milky **(d) colour of lime water becomes green.**

(iii) Following observations are observed when calcium oxide reacts vigorously with water.



Identify the incorrect observations

(I) It is an endothermic reaction (II) Slaked lime is produced.

(III) Quick lime is produced. (IV) It is an exothermic reaction.

(V) It is a combination reaction

(a) (I) and (II) **(b) (III) and (IV)** **(c) (I) and (III)** **(d) (II), (IV) and (V)**

(iv) Quick lime combines Vigorously with water to form (A) which reacts slowly with the carbon dioxide in air to form (B)

Identify the compounds(A) and (B)

	(A)	(B)
(a) Calcium carbonate	**Calcium hydroxide**	
(b) Calcium hydroxide	**Calcium carbonate**	
(c) Calcium bicarbonate	**Calcium**	
(d) Calcium bicarbonate		

(v) Among the following, the endothermic reaction is

(a) combination of carbon and oxygen to form carbon monoxide

(b) combination of nitrogen and oxygen to form nitrogen monoxide

(c) combination of glucose and oxygen to form carbon dioxide and water

(d) combination of zinc and hydrochloric acid to form zinc chloride and hydrogen

118) Reactions in which one element takes place of another element in a compound, are known as displacement reactions. In general, more reactive elements displaces a less reactive element from its compound. In all single displacement reactions, only one element displaces another element from its compound. The single displacement reactions are, however, written as just displacement reactions. The displacement reaction between iron (III) oxide and powdered aluminium produces so much heat that iron metal obtained is in molten form.

(i) Copper displaces which of the following metals from its salt solution?

(a) $ZnSO_4$ (b) $FeSO_4$ (c) $AgNO_3$ (d) $NiSO_4$

(ii) When zinc reacts with dilute sulphuric acid, the gas evolved is

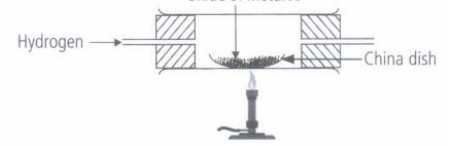
(a) red in colour and have a sweet smelling

(b) green in colour and have a foul smell

(c) colourless, odourless and burns with a pop sound

(d) colourless, pungent smelling and burns with a pop sound

(iii) When dry hydrogen is passed over a heated oxide of metal X using the apparatus shown below, a reddishbrown residue is obtained



The reddish -brown residue could be

(a) copper (b) lead (c) silver (d) zinc

(iv) Which of the following reactions is a displacement reaction?

(a) $CaO + H_2O \longrightarrow Ca(OH)_2$ (b) $MgCO_3 \longrightarrow Mg + CO_2$

(c) $Mg + CuSO_4 \longrightarrow MgSO_4 + Cu$ (d) $H_2 + Cl_2 \longrightarrow 2HCl$

(v) When dilute hydrochloric acid is added to granulated zinc placed in a test tube, the observation made is

(a) the surface of the metal turns shining

(b) the reaction mixture turns milky

(c) greenish yellow gas is evolved

(d) the colourless and odourless gas evolves with a pop sound.

119) Those reactions in which two compounds react by an exchange of ions to form two new compounds are called double displacement reactions. A double displacement reaction usually occurs in solution and one of the products, being insoluble, precipitate out (separates as a solid). Any reaction in which an insoluble solid (called precipitate) is formed that separates from the solution is called a precipitation reaction. The reaction in which acid or acidic oxide reacts with base or basic oxide to form salt and water is called neutralisation reaction.
For example, $2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O$
(i) When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a

(a) combination reaction **(b) displacement reaction**

(c) decomposition reaction **(d) double displacement reaction**

(ii) Which of the following is not a double displacement reaction?
(a) $AgNO_{3(aq)} + NaCl_{(aq)} \longrightarrow AgCl_{(s)} + NaNO_{3(aq)}$ (b) $Zn_{(s)} + H_2SO_{4(aq)} \longrightarrow ZnSO_{4(aq)} + H_{2(g)}$
(c) $CuSO_{4(aq)} + H_2\ S_{(aq)} \longrightarrow CuS_{(s)} + H_2SO_{4(aq)}$ (d) $Pb(NO_3)_{2(aq)} + 2KI_{(aq)} \longrightarrow PbI_{2(s)} + 2KNO_{3(aq}$
(iii) Barium chloride on reaction with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?
(I) Displacement reaction
(II) Precipitation reaction
(III) Combination reaction
(IV) Double displacement reaction

(a) (I) only **(b) (II) only** **(c) (III) and (IV) only** **(d) (II) and (V) only**

(iv) Identify A in the following reaction.
$AlCl_{3(aq)} + 3NH_4OH_{(aq)} \longrightarrow A + 3NH_4Cl_{(aq)}$
(a) Al(OH) **(b) Al O** **(c) AlH** **(d) AlN**