1. Chemical Reactions and Equations - Board Exam Questions (1 Mark)

Practice these questions online at pschool.in/science/ncert/g10/chap-1

1 Mark Questions (MCQ)

1) *(i) $AgNO_3 + NaCl \rightarrow NaNO_3 + AgCl$*
(ii) $K_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2KCl$
Which of the following options clearly describes both the reactions?
(a) (i) is double displacement, (ii) is displacement reaction
(b) Both, (i) and (ii) are displacement reactions and precipitation reactions
(c) Both, (i) and (ii) are double displacement reactions and precipitation reactions
(d) (i) is displacement, (ii) is double displacement reaction

2) *The gases evolved on heating lead (II) nitrate crystals are:*
(a) NO and O_2 (b) N_2 and NO_2 (c) NO_2 and H_2 (d) NO_2 and O_2

3) *Which of the following are combination reactions?*
(i) $2KClO_3 \rightarrow 2KCl + 3O_2$
(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)

4) *When ferrous sulphate crystals are heated in a test tube, we observe that:*
(a) A colourless gas with no smell is evolved
(b) A brown gas is evolved
(c) The green colour of the salt fades and a gas with the smell of burning sulphur is evolved
(d) The green colour of the salt fades and no gas is evolved

5) *A student notices that her silver jewellery turned dull and had a grey-black coating over it after wearing for a few months. What results in the change in colour of the silver metal?*

(a) The polish over the jewellery was removed after wearing for a few months

(b) The jewellery comes in contact with air, moisture and acids and corrodes

(c) Dust particles over the jewellery change its colour

(d) Its colour changes due to rusting

6) *Which of the following is an example of a displacement reaction?*

(a) The combustion of natural gas

(b) The reaction of a reactive metal with dilute acid

(c) The electrolysis of water

(d) The reaction of quick lime with water

7) *In the following equation* $x\,KI + H_2O_2 \rightarrow I_2 + y\,KOH$, *x and y respectively are:*

(a) 2, 2 (b) 1, 2 (c) 2, 1 (d) 1, 1

8) *The volume ratio of hydrogen and oxygen gases liberated during electrolysis of water is*

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

9) $C_6H_{12}O_6(aq) + 6O_2(g) \rightarrow 6CO_2(g) + 6H_2O(l)$. *The above reaction is an example of -*

(a) Displacement Reaction (b) Endothermic Reaction

(c) Exothermic Reaction (d) Neutralisation Reaction

10) *Chameleons contain crystals that reflect light and produce colour. Adjusting the spacing between these crystals, they can alter the wavelengths of light reflected, thus changing their skin colour. Based on the above information, we can infer that the change in colour by chameleons is a:*

(a) chemical change because change in colour takes place
(b) chemical change because wavelength of reflected light changes
(c) physical change because the space between crystals is adjusted
(d) physical change because light is reflected by crystals

11) *A food label is given below. E304 and E307b are added to the flavoured biscuits.*
Which of the following is added to food packets for the same reason?


FLAVOURED BISCUITS
Wheat Flour, Vegetable Oil, Sugar, Salt, Malt Extract (From **Barley**), Baking Powder, Flavour Enhancers (E621, E635), Onion Powder, Natural Flavour, Maltodextrin (Maize), Chicken, Spices, Antioxidants (E304, E307b From **Soy**), Emulsifier (**Soy** Lecithin).
CONTAINS SOY AND GLUTEN CONTAINING CEREALS.
MAY CONTAIN TRACES OF EGG, MILK, PEANUT, SESAME AND TREE NUT.

(a) salt (b) vinegar (c) nitrogen (d) vanilla

12) *In the food industry nitrogen is used as a/an*
(a) preservative (b) oxidising agent (c) antioxidant (d) colouring agent

13) *Electrolysis of water is a decomposition reaction. The mass ratio (M_H : M_O) of hydrogen and oxygen gases liberated at the electrodes during electrolysis of water is:*
(a) 8 : 1 (b) 2 : 1 (c) 1 : 2 (d) 1 : 8

14) *The correct balanced chemical equation showing exothermic reaction in which natural gas burns in air is:*
(a) $CH_4 + O_2 \rightarrow CO_2 + 2H_2O$ (b) $CH_4 + 2O_2 \rightarrow 2CO_2 + 2H_2O$ + Energy
(c) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ (d) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ + Energy

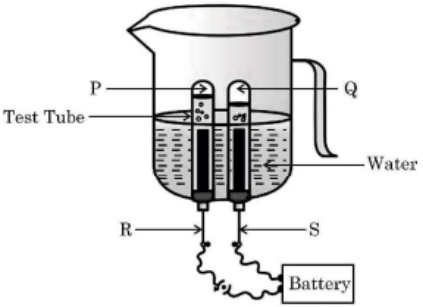
15) *Consider the following chemical equation:*
$p\ Al + q\ H_2O \rightarrow r\ Al_2O_3 + s\ H_2$
To balance this chemical equation, the values of 'p', 'q', 'r' and 's' must be respectively:
(a) 3, 2, 2, 1 (b) 2, 3, 3, 1 (c) 2, 3, 1, 3 (d) 3, 1, 2, 2

16) *In which one of the following situations a chemical reaction does not occur?*
(a) Milk is left open at room temperature during summer
(b) Grapes get fermented
(c) An iron nail is left exposed to humid atmosphere
(d) Melting of glaciers

17) *The main observations while performing the experiment of burning magnesium ribbon in air are:*
(i) Magnesium ribbon burns with a dazzling white flame.
(ii) A white powder is formed.
(iii) Magnesium ribbon vapourises.
(iv) Aqueous solution of the white powder turns blue litmus to red.
(a) (i) and (iv) (b) (ii) and (iii) (c) (i) and (ii) (d) (iii) and (iv)

18) *The values of a, b, c and d in the following balanced chemical equation are respectively:*
$a\ Pb(NO_3)_2 \text{—(heat)}\rightarrow b\ PbO + c\ NO_2 + d\ O_2$
(a) 1, 1, 2, 1 (b) 1, 1, 1, 2 (c) 2, 2, 1, 4 (d) 2, 2, 4, 1

19) *In the following experimental setup of electrolysis of water, if P and Q are the gases collected in the test tubes enclosing the electrodes R and S, then select the option/options in which the matching is correct:*
(i) P – Oxygen gas, R – Anode
(ii) P – Hydrogen gas, R – Cathode
(iii) Q – Hydrogen gas, S – Cathode
(iv) Q – Oxygen gas, S – Anode



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

20) *Select from the following a statement which is not true about burning of magnesium ribbon in air:*
(a) It burns with a dazzling white flame
(b) A white powder is formed on burning
(c) It is an endothermic reaction
(d) It is an example of a combination reaction

21) *The colour of the solution observed after about 1 hour of placing iron nails in copper sulphate solution is*
(a) Blue (b) Pale green (c) Yellow (d) Reddish brown

22) *Which of the following equations represent redox reactions and what are the values for 'p' and 'q' in these equations?*
Equation 1: $Fe_2O_3(s) + 2Al(s) \rightarrow Al_2O_3(s) + p\ Fe(l) + heat$
Equation 2: $2C_4H_{10}(g) + 13O_2(g) \xrightarrow{(\Delta)} 8CO_2(g) + q\ H_2O(g)$
(a) Only equation 1 is a redox reaction, p = 1 and q = 3
(b) Both equations 1 and 2 are redox reactions, p = 2 and q = 4
(c) Only equation 2 is a redox reaction, p = 2 and q = 10
(d) Both equations 1 and 2 are redox reactions, p = 2 and q = 10

23) *In the reaction of aqueous solution of barium chloride with aqueous solution of sodium sulphate, the aqueous solution formed will be:*
(a) $BaCl_2$ (b) $BaSO_4$ (c) Na_2SO_4 (d) NaCl

24) *Select from the following a decomposition reaction in which source of energy for decomposition is light:*
(a) $2FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$ (b) $2H_2O \rightarrow 2H_2 + O_2$
(c) $2AgBr \rightarrow 2Ag + Br_2$ (d) $CaCO_3 \rightarrow CaO + CO_2$

25) $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$
The reaction given above is a redox reaction because in this case:
(a) MnO_2 is oxidised and HCl is reduced (b) HCl is oxidised
(c) MnO_2 is reduced (d) MnO_2 is reduced and HCl is oxidised

26) *Solid Calcium oxide reacts vigorously with water to form Calcium hydroxide accompanied by the liberation of heat. From the information given above it may be concluded that this reaction*
(a) is endothermic and pH of the solution formed is more than 7
(b) is exothermic and pH of the solution formed is 7
(c) is endothermic and pH of the solution formed is 7
(d) is exothermic and pH of the solution formed is more than 7

27) *Select from the following a process in which a combination reaction is involved:*
(a) Black and White photography (b) Burning of coal
(c) Burning of methane (d) Digestion of food

28) *Identify the correct statement about the following reaction:*
$2H_2S + SO_2 \rightarrow 2H_2O + S$
(a) H_2S is oxidising agent and SO_2 is reducing agent
(b) H_2S is reduced to sulphur
(c) SO_2 is oxidising agent and H_2S is reducing agent
(d) SO_2 is oxidised to sulphur

29) *Identify the product 'X' obtained in the following chemical reaction:*
$CaCO_3 \xrightarrow{(\Delta)} 'X' + CO_2$
(a) Quick lime (b) Gypsum (c) Lime Stone (d) Plaster of Paris

30) *Consider the following Chemical equation:*
$a\ Al_2O_3 + b\ HCl \rightarrow c\ AlCl_3 + d\ H_2O$
In order to balance this chemical equation, the values of a, b, c and d must be
(a) 1, 6, 2 and 3 (b) 1, 6, 3 and 2 (c) 2, 6, 2 and 3 (d) 2, 6, 3 and 2

31) *Which one of the following reactions is different from the remaining three?*
(a) $NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$ (b) $CaO + H_2O \rightarrow Ca(OH)_2$
(c) $KNO_3 + H_2SO_4 \rightarrow KHSO_4 + HNO_3$ (d) $ZnCl_2 + H_2S \rightarrow ZnS + 2HCl$

32) *$Zn + 2CH_3COOH \rightarrow (CH_3COO)_2Zn + H_2$*
The above reaction is a:
(a) Decomposition reaction (b) Displacement reaction
(c) Double displacement reaction (d) Combination reaction

33) *To balance the following chemical equation, the values of the coefficients x, y and z must be respectively:*
$x\ Zn(NO_3)_2 \text{—}(\Delta)\rightarrow y\ ZnO + z\ NO_2 + O_2$
(a) 4, 2, 2 (b) 4, 4, 2 (c) 2, 2, 4 (d) 2, 4, 2

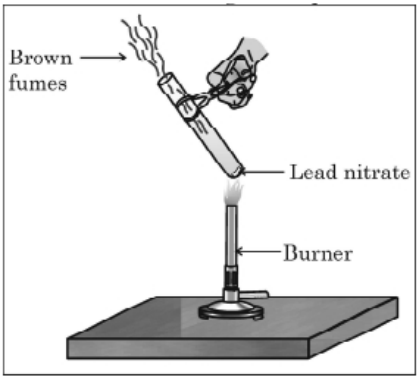
34) *Which of the following is a redox reaction, but not a combination reaction?*
(a) $C + O_2 \rightarrow CO_2$ (b) $2H_2 + O_2 \rightarrow 2H_2O$
(c) $2Mg + O_2 \rightarrow 2MgO$ (d) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

35) *When 50g of lead powder is added to 300 ml of blue copper sulphate solution, after a few hours, the solution becomes colourless. This is an example of*
(a) Combination reaction (b) Decomposition reaction
(c) Displacement reaction (d) Double displacement reaction

36) *Which of the following is an endothermic reaction?*
(a) Burning of candle (b) Cooking of food

(c) Decomposition of Vegetable matter (d) Reaction of Sodium with air

37) *The emission of brown fumes in the given experimental set-up is due to*



(a) thermal decomposition of lead nitrate which produces brown fumes of nitrogen dioxide
(b) thermal decomposition of lead nitrate which produces brown fumes of lead oxide
(c) oxidation of lead nitrate forming lead oxide and nitrogen dioxide
(d) oxidation of lead nitrate forming lead oxide and oxygen

38) $MnO_2 + x\ HCl \rightarrow MnCl_2 + y\ H_2O + z\ Cl_2$
In order to balance the above chemical equation, the values of x, y and z respectively are:
(a) 6, 2, 2 (b) 4, 1, 2 (c) 4, 2, 1 (d) 2, 2, 1

39) *Which of the following is an example of endothermic process?*
(a) Formation of slaked lime
(b) Decomposition of vegetable matter into compost
(c) Dissolution of ammonium chloride in water
(d) Digestion of food in our body

40) *When aqueous solutions of potassium iodide and lead nitrate are mixed, an insoluble substance separates out. The chemical equation for the reaction involved is:*
(a) $KI + PbNO_3 \rightarrow PbI + KNO_3$ (b) $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$
(c) $KI + Pb(NO_3)_2 \rightarrow PbI + KNO_3$ (d) $KI + PbNO_3 \rightarrow PbI_2 + KNO_3$

41) *A metal ribbon 'X' burns in oxygen with a dazzling white flame forming a white ash 'Y'. The correct description of X, Y and the type of reaction is:*
(a) X = Ca; Y = CaO; Type of reaction = Decomposition
(b) X = Mg; Y = MgO; Type of reaction = Combination
(c) X = Al; Y = Al_2O_3; Type of reaction = Thermal decomposition
(d) X = Zn; Y = ZnO; Type of reaction = Endothermic

42) *The balanced chemical equation showing reaction between quicklime and water is:*
(a) $2CaO + H_2O \rightarrow 2CaOH + H_2 + Heat$ (b) $CaO + H_2O \rightarrow Ca(OH)_2 + H_2 +$ Heat
(c) $CaO + H_2O \rightarrow Ca(OH)_2 + Heat$ (d) $2CaO + 3H_2O \rightarrow 2Ca(OH)_3 + O_2 +$ Heat

43) *Study the following chemical reaction:*
$2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)\uparrow$
The reducing agent in this reaction is:
(a) Na (b) H_2O (c) NaOH (d) H_2

44) *Select the appropriate state symbols of the products given as X and Y in the following chemical equation by choosing the correct option from table given below:*
$Zn(s) + H_2SO_4(l) \rightarrow ZnSO_4(X) + H_2(Y)$
(a) (X): (s), (Y): (l) (b) (X): (aq), (Y): (g)
(c) (X): (aq), (Y): (s) (d) (X): (g), (Y): (aq)

45) *Consider the following chemical equation I and II*
I. $Mg + 2HCl \rightarrow MgCl_2 + H_2$

II. $NaOH + HCl \rightarrow NaCl + H_2O$

The correct statement about these equations is –

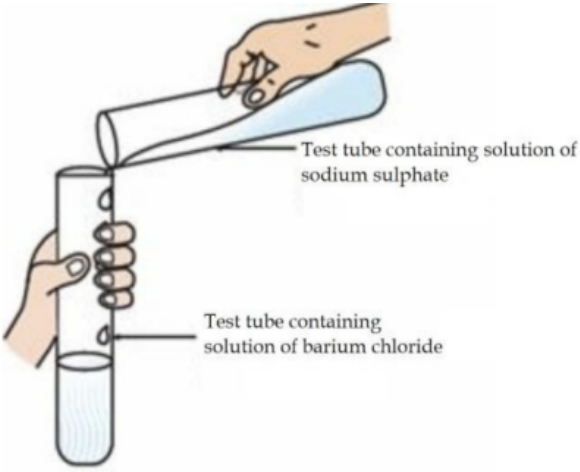
(a) 'I' is a displacement reaction and 'II' is a decomposition reaction

(b) 'I' is a displacement reaction and 'II' is double displacement reaction

(c) Both 'I' and 'II' are displacement reactions

(d) Both 'I' and 'II' are double-displacement reactions

46) *Identify the product which represents the solid state in the above reaction.*



(a) Barium chloride (b) Barium sulphate (c) Sodium chloride (d) Sodium sulphate

47) *The colour of the solution observed after 30 minutes of placing zinc metal to copper sulphate solution is*

(a) Blue (b) Colourless (c) Dirty green (d) Reddish Brown

48) *In the redox reaction*

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

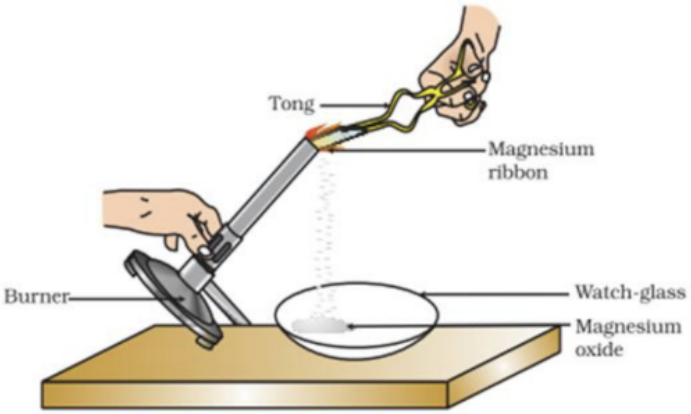
(a) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to H_2O

(b) MnO_2 is reduced to $MnCl_2$ & HCl is oxidized to Cl_2

(c) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to Cl_2

(d) MnO_2 is oxidized to $MnCl_2$ & HCl is reduced to H_2O

49) *Which of the following is the correct observation of the reaction shown in the above set up?*



(a) Brown powder of Magnesium oxide is formed
(b) Colourless gas which turns lime water milky is evolved
(c) Magnesium ribbon burns with brilliant white light
(d) Reddish brown gas with a smell of burning Sulphur has evolved

Assertion and Reason

1) *Assertion (A): Reaction of quick lime with water is an exothermic reaction.*
Reason (R): A large amount of heat is evolved on the reaction of quick lime and water.

2) *Assertion (A): Decomposition reactions are generally endothermic reactions.*
Reason (R): Decomposition of organic matter into compost is an exothermic process.

3) *Assertion (A): Silver chloride turns grey in sunlight.*
Reason (R): Decomposition of silver chloride into silver and chlorine takes place by sunlight.

4) *Assertion (A): In the following reaction $ZnO + C \rightarrow Zn + CO$, ZnO undergoes reduction.*
Reason (R): Carbon is a reducing agent that reduces ZnO to Zn.

5) *Assertion (A): Rusting of Iron is endothermic in nature.*
Reason (R): As the reaction is slow, the release of heat is barely evident.

6) *Assertion (A): Silver bromide decomposition is used in black and white photography.*
Reason (R): Light provides energy for this exothermic reaction.