

SANSKAR INTERNATIONAL SCHOOL

Chemistry- Class 10

Chemical Reaction & Equation

Assignment

Exercises

I.) MULTIPLE CHOICE QUESTIONS :-

1. The reaction $H_2 + Cl_2 \rightarrow 2HCl$ represents :

- (a) Oxidation
 - (b) Reduction
 - (c) Decomposition
 - (d) Combination
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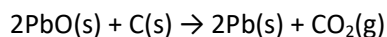
2. In the reaction $2PbO + C \rightarrow 2Pb + CO_2$

- (a) PbO is oxidised
 - (b) C act as an oxidising agent
 - (c) C act as a reduction agent
 - (d) Reaction does not represent redox reaction.
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3. A substance which oxidizes itself and reduces other is known as

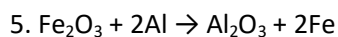
- (a) Oxidising agent
 - (b) reducing agent
 - (c) Both (a) and (b)
 - (d) None of these.
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4. Which of the statements about the reaction below are incorrect?



- (a) Lead is getting reduced.
- (b) Carbon dioxide is getting oxidised.
- (c) Carbon is getting oxidised.
- (d) Lead oxide is getting reduced.

- (i) (a) and (b)
 - (ii) (a) and (c)
 - (iii) (a), (b) and (c)
 - (iv) all
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The above reaction is an example of a:

- (a) combination reaction
 - (b) double displacement reaction
 - (c) decomposition reaction
 - (d) displacement reaction
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6. What happens when dilute hydrochloric acid is added to iron filings?

- (a) Hydrogen gas and iron chloride are produced
 - (b) Chlorine gas and iron hydroxide are produced
 - (c) No reaction takes place
 - (d) Iron salt and water are produced
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7.a chemical reaction involve in

- a) Only breaking of bonds
 - b) Only formation of bonds
 - c) Both breaking and formation of bonds
 - d) None of these
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8. single displacement reaction involves

- a) Oxidation
 - b) Reduction
 - c) Redox
 - d) Heating
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9. string of ants and bee contain

- a) Formic acid
 - b) Vinegar
 - c) Succinic acid
 - d) Common salt
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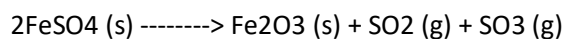
10 a red brown gas is released on heating lead nitrate. it is an example of

- a) Combination reaction
 - b) Oxidation reaction
 - c) Decomposition reaction
 - d) Reduction reaction
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11. CaO and CO₂ are produced by heating CaCO₃. What is the type of the reaction and the process?

- (a) displacement reaction and endothermic process
 - (b) decomposition reaction and exothermic process
 - (c) decomposition reaction and endothermic process
 - (d) combination reaction and endothermic process
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12. When ferrous sulphate is heated the following reaction takes place:



The above reaction is called _____ of ferrous sulphate.

- (a) Thermal Displacement
- (b) Combination
- (c) Thermal Decomposition
- (d) Double displacement

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13. How the colour changes when the gases after thermal decomposition of ferrous sulphate come in contact with an acidified solution of potassium dichromate?

- (a) Green to orange
- (b) Orange to green
- (c) Blue to green
- (d) Red to colourless

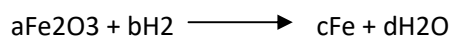
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14. What is the type of the reaction between sodium sulphate and barium chloride?

- (a) Decomposition
- (b) Direct combination
- (c) Single displacement
- (d) Double displacement.

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15. In the balanced equation -

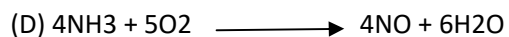
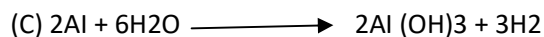
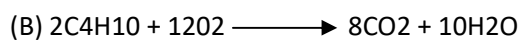
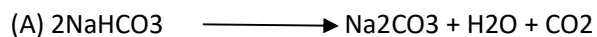


The value of a,b,c,d are respectively -

- (A) 1,1,2,3
- (B) 1,1,1,1
- (C) 1,3,2,3
- (D) 1,2,2,3

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16. Which of the following reactions is not balanced:-



17. The equation - $\text{Cu} + x\text{HNO}_3 \longrightarrow \text{Cu}(\text{NO}_3)_2 + y\text{NO}_2 + 2\text{H}_2\text{O}$. The values of x and y are-

(A) 3 and 5

(B) 8 and 6

(C) 4 and 2

(D) 7 and 1

18. Neutralization reaction is an example of -

(A) exothermic reaction

(B) endothermic reaction

(C) oxidation

(D) none of these

19. Which of the following statements is/are true

(A) The total mass of the substance remains same in a chemical change.

(B) A chemical change is permanent and irreversible.

(C) A physical change is temporary and reversible.

(D) All the these.

20. Which of the following statements is 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 reactin.

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

(D) All are correct.

21. $\text{Zn(s)} + \text{H}_2\text{SO}_4(\text{aq}) \longrightarrow \text{ZnSO}_4(\text{aq}) + \text{H}_2(\text{g})$ is an example of-

(A) precipitation reaction

(B) endothermic reaction

(C) evolution of gas

(D) change in colour

22. When dilute hydrochloric acid is added to iron fillings -

(A) hydrogen gas and ferric chloride are produced.

(B) chlorine gas and ferric hydroxide are produced.

(C) no reaction takes place.

(D) iron salt and water are produced.

23. In the reaction $x\text{Pb}(\text{NO}_3)_2 \longrightarrow y\text{PbO} + z\text{NO}_2 + \text{O}_2$, x, y and z are -

(a) 1,1,2

(B) 2,2,4

(C) 1,2,4

(D) 4,2,2

24. In the reaction $\text{FeSO}_4 + x \longrightarrow \text{Na}_2\text{SO}_4 + \text{Fe}(\text{OH})_2$, x is -

(A) Na_2SO_4

(B) H_2SO_4

(C) NaOH

(D) None of these

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A).QUESTION CARRY ONE MARKS

1. What is a chemical equation?

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2. What happens when magnesium ribbon burns in air?

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3. Name the gas evolved when zinc reacts with dil. HCl.

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4. A zinc rod is left for nearly 20 minutes in a copper sulphate solution. What change would you observe in zinc rod?

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5. What is rust?

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6. Name four types of chemical reactions?

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7. What are combination reactions?

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8. Give two example of combination reaction?

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9. What are displacement reactions?

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10. What are double displacement reactions?

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11. What are oxidation reactions?

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12. What are reduction reactions?

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13. What is rancidity?

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14. Why do we apply paint on iron articles?

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15. what is the name of gas which burns with pop sounds

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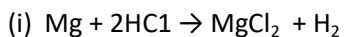
16. In the reaction, $\text{Be}_2\text{C} + x\text{H}_2\text{O} \rightarrow y\text{Be}(\text{OH})_2 + \text{CH}_4$. Write the values of x and y.

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17. Name the brown coloured gas evolved when lead nitrate crystals are heated in a dry test tube.

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18. What is the difference between the following two reactions?



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19. Double displacement reactions are also known as precipitation reactions. Why?

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20. State one basic difference between a physical change and a chemical change.

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21. Why is hydrogen peroxide kept in coloured bottles?

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22. Zinc liberates hydrogen gas when reacts with dilute Hydrochloric Acid, whereas copper does not. Write the reason?

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23. Aluminium is a reactive metal. But is still used for packing food articles. Write one reason for its use?

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Directions :- In the following questions a statement of Assertion is followed by a statement of Reason. Mark the correct choice as

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (c) If Assertion is true but Reason is false.
- (d) If Reason is true but Assertion is false.
- (e) If both Assertion and Reason are false.

24. **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.

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25. **Assertion:** In a balanced chemical equation, total mass of the each element towards reactant side = total mass of the same element towards product side.

Reason: Mass can neither be created nor destroyed during a chemical change.

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26. **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, its an endothermic reaction.

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27. **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.

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28. **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.

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B).QUESTION CARRY TWO MARKS

1.A milkman added a small amount of baking soda to fresh milk.

(a) Why does he shift the pH of fresh milk to slightly alkaline?

(b) Why does this milk take a longer time to set as a curd?

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2. Write the balanced equation for the following reaction and identify the type of reaction in each case.

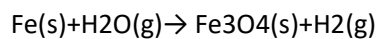
I. Potassium bromide +Barium Iodide → Potassium iodide +Barium bromide.

II. Hydrogen (g) +Chlorine(g) → Hydrogen Chloride (g)

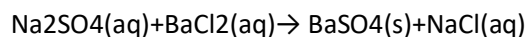
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3.(a) Balance the chemical equation :



(b) Identify the type of reaction in the equation given below.



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4. Select

- (i) combination reaction
- (ii) decomposition reaction and
- (iii) displacement reaction from the following chemical equations:
 - i. $\text{ZnCO}_3\text{(s)} \rightarrow \text{ZnO(s)} + \text{CO}_2\text{(g)}$
 - ii. $\text{Pb(s)} + \text{CuCl}_2\text{(aq)} \rightarrow \text{PbCl}_2 + \text{Cu(s)}$
 - iii. $\text{NaBr(aq)} + \text{AgNO}_3\text{(aq)} \rightarrow \text{AgBr(s)} + \text{NaNO}_3\text{(aq)}$
 - iv. $\text{H}_2\text{(g)} + \text{Cl}_2\text{(g)} \rightarrow 2\text{HCl(g)}$

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5. Zinc liberates hydrogen gas when reacted with dilute hydrochloric acid, where as copper does not. Explain why?

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6. what happen when Zn metal is dipped in CuSO_4 solution ?give the chemical reaction involved. State which is more reactive Zn or Cu ?

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7. When hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation for this reaction and state:

- (i) the substance oxidised.
- (ii) the substance reduced in the reaction.

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8. What are characteristics of chemical reaction?

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9. Identify the substance oxidized, substance reduced, oxidising and reducing agent.



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C).QUESTION CARRY THREE MARKS

1. what is corrosion? State the conditions necessary for rusting of iron. How rusting is harmful?

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2. what is rancidity? Write the common method to prevent it.

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3. Write balanced chemical equations for the following chemical reactions

(a) Hydrogen + Chlorine → Hydrogen Chloride

(b) Lead + Copper Chloride → Lead Chloride + Copper

(c) Zinc Oxide + Carbon → Zinc + Carbon Monoxide

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4. What is redox reaction? When magnesium ribbon burns in the air and forms a white ash, is magnesium oxidized or reduced?

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5. (a) What happens when Iron nails are kept into a Copper sulphate solution? Write the balanced chemical equation for the reaction.

(b) Give one example of precipitation reaction.

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6.Explain why:

(a) Respiration is an exothermic reaction?

(b) All decomposition reactions are endothermic reaction?

(c) When blue salt of copper sulphate is heated, it becomes colourless?

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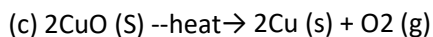
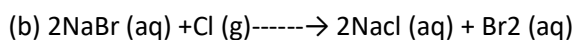
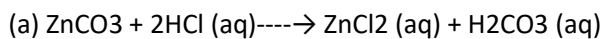
7.The chemical reaction between barium chloride and sodium sulphate is an example of

(a) combination reaction (b) decomposition reaction

(c) displacement reaction (d) double displacement reaction

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8. Identify the type of reaction in the following



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9. When hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation for this reaction and state:

- (i) the substance oxidised.
- (ii) the substance reduced in the reaction.

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10. a solution of a substance "X" is used for white washing

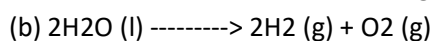
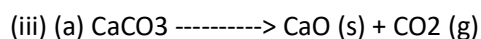
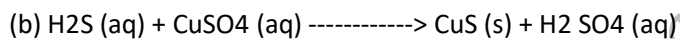
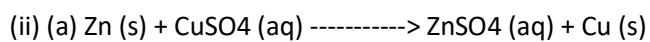
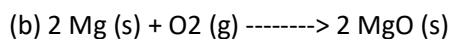
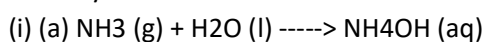
- (i) name the substance "X" and write its formula
- (ii) write the reaction of the substance "X" named in (i) above with water

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11. How does a displacement reaction differ from a double displacement reaction? Give examples to explain.

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12. What way the two reactions in each of the following pairs are different from each other?



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13. State one example each along-with the chemical equation characterised by the following:

(i) Change in state

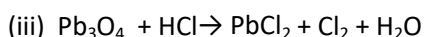
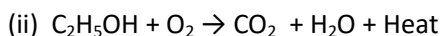
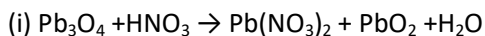
(ii) Evolution of gas

(iii) Change in temperature

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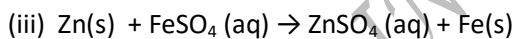
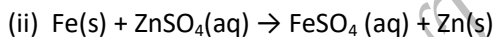
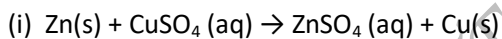
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14. Balance the following chemical equations along with the symbols of physical states of all the reactants and the products:-



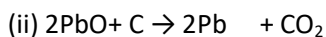
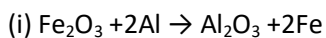
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15. Study the reactions given and indicate which of the following chemical reactions will occur with suitable reason for each.



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16. What is a Redox reaction? Identify the substances that are oxidised and the substances that are reduced in the following reactions:



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17. On heating blue coloured powder of Copper (II) Nitrate in a boiling tube, Copper Oxide (black), Oxygen gas and a brown gas X are formed.

(i) Write a balanced chemical equation of the reaction. _____ ,

(ii) Identify the brown gas X evolved.

(iii) Identify the type of reaction.

(iv) What could be the pH range of the aqueous solution of the gas X?

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18 (a) Mention the four type of information given by an equation.

(b) State the law of conservation of mass as applicable in a chemical reaction.

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19. Give reasons:

(i) All decomposition reactions are endothermic reactions.

(ii) Colour of Copper Sulphate solution changes when an iron nail is dipped in it.

(iii) Respiration is an exothermic reaction.

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20. Write the chemical equation when:

(i) Dilute hydrochloric acid is added to solid Sodium Carbonate.

(ii) Quicklime is treated with Water.

(iii) Sodium chloride solution is added to Lead Nitrate solution.

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21. 2g of ferrous sulphate crystals are heated in a boiling tube. Answer the following

(i) Write the colour of Ferrous Sulphate crystals both before heating and after heating.

(ii) Name the gases produced during heating.

(iii) Write the chemical equation for the reaction.

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22. Identify the colour and chemical name of the substance of coating in silver, copper and iron when they are exposed to air.

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23. Write an example in each of the following case to support that :

(i) Corrosion of some metals is an advantage.

(ii) Corrosion of a metal is a serious problem.

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24. Name the salts that are used in black and white photography. Write the reactions when they are exposed to light. Define the type of chemical reaction taking place.

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25. What information do we get from a balanced chemical equation?

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26. In a container, solid calcium oxide was taken and water was added slowly to it.

(a) State the two observations made in the experiment.

(b) Write the name and chemical formula of the product formed

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27. Give reasons:

(a) Magnesium ribbon should be cleaned before burning in air.

(b) Photosynthesis is considered as an endothermic reaction.

(c) Combustion reaction is an oxidation reaction.

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D).QUESTION CARRY FIVE MARKS

1. Write balanced chemical equation for the following statements:

(i) NaOH solution is heated with zinc granules.

(ii) Excess of carbon dioxide gas is passed through lime water.

(iii) Dilute sulphuric acid reacts with sodium carbonate.

(iv) Egg shells are dropped in hydrochloric acid.

(v) Copper (II) oxide reacts with dilute hydrochloric acid

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2. (a) Define corrosion
(b) What is corrosion of iron called?
(c) How will you recognise the corrosion of silver?
(d) Why corrosion of iron is serious problem?
(e) How can we prevent corrosion?

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3. what is the colour of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ crystals ?how does this colour change upon heating? give balanced chemical equation for the changes.

4. Write the following in the form of balanced chemical equations:-

- (a) Calcium carbonate decomposes on heating to form calcium oxide and carbon dioxide.
(b) When ammonium hydroxide is added to a solvent of iron (II) Sulphate, a green ppt of iron (II) hydroxide and ammonium Sulphate are formed.
(c) When a nail of iron is added to a solution of copper Sulphate, iron (II) Sulphate and copper metal are formed.
(d) Zinc reacts with dil hydrochloric acid to form zinc chloride and hydrogen gas is liberated.

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6. write balanced chemical equations for the following reactions:

- (i) carbon dioxide gas is passed through lime water to form a precipitate of calcium carbonate.
- (ii) zinc metal reacts with hydrochloric acid to produce zinc chloride and hydrogen gas.
- (iii) potassium metal reacts with water to form potassium hydroxide and hydrogen gas.
- (iv) silver nitrate is treated with sodium chloride to form silver chloride and sodium nitrate.
- (v) liquid hydrogen peroxide decomposes to form water and oxygen gas.

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7. Balance the following chemical equations :

- I. $Al(OH)_3 \xrightarrow{-\Delta} Al_2O_3 + H_2O$
- II. $SO_2 + H_2S \longrightarrow H_2O + S$

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12. You are provided with two containers made up of copper and aluminium. You are also provided with solutions of dil. HCl, dil. HNO₃ and H₂O. In which of the above containers can these solutions be kept?

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13. Write balanced chemical equations for the following reactions:

- (i) NaOH solution is heated with zinc granules.
- (ii) Excess of Carbon Dioxide gas is passed through lime water.
- (iii) Dilute Sulphuric Acid reacts with sodium carbonate.
- (iv) Egg shells are dropped in Hydrochloric Acid.
- (v) Copper (II) Oxide reacts with dilute Hydrochloric Acid.

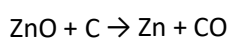
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14. A compound 'X' on heating with excess Conc. Sulphuric Acid at 443 K gives an unsaturated compound 'Y', 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of formation of 'Y' and also write the role of Sulphuric Acid in the reaction.

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15. Consider the Chemical equation given below and answer the questions that follow.



- (a) Name the substance which is getting oxidised.
- (b) Name the substance which is getting reduced.
- (c) Name the oxidising agent.
- (d) Name the reducing agent.
- (e) What type of a reaction does this equation represent?

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16. With the help of an activity, demonstrate how do we know that a chemical reaction has taken place?

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