

**CHAPTER -1 CHEMICAL RECTIONS AND EQUATIONS**

Q-1 Answer the following questions:

- (a) Write any two characteristics associated with rancid food.
- (b) What changes in the colour is observed when white silver chloride is left exposed to sunlight? State the type of chemical reaction in this change.
- (c) Why do gold and platinum not corrode in moist air?

Q-2 State your observations when a clean magnesium strip is held in a Bunsen flame for some time.

Q-3 When the powder of a common metal is heated in an open china dish, its colour turns black. However, when hydrogen is passed over the hot black substance so formed, it regains its Original colour. Based on the above information answer the following questions:

- (i) What type of chemical reaction takes place in each of the two given steps?
- (ii) Name the metal initially taken in the powder form. Write balanced chemical equations for both reactions

Q-4 "A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed".

- (i) Translate the above statement into a chemical equation.
- (ii) State two types in which this reaction can be classified.

Q-5 An aluminium can is used to store ferrous sulphate solution. It is observed that in few days holes appeared in the can. Explain the observation and write chemical equation of it.

Q-6 A house wife wanted her house to be white washed. She bought 10 kg of quick lime from the market and dissolved in 30 litres of water. She noticed that water started boiling even when it was not being heated. Give reason for her observation. Write the corresponding equation and name the product formed.

Q-7 Balance the given chemical equations :

- (i)  $\text{Al(s)} + \text{CuCl}_2(\text{aq}) \longrightarrow \text{AlCl}_3(\text{aq}) + \text{Cu(s)}$
- (ii)  $\text{FeSO}_4(\text{s}) \xrightarrow{\text{heat}} \text{Fe}_2\text{O}_3(\text{s}) + \text{SO}_2(\text{g}) + \text{SO}_3(\text{g})$
- (iii)  $\text{MnO}_2 + \text{HCl}(\text{aq}) \longrightarrow \text{MnCl}_2(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{Cl}_2(\text{g})$
- (iv)  $\text{Pb}(\text{NO}_3)_2 \longrightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$

Q-8 What is the brown coloured gas evolved when lead nitrate crystals are heated in a dry test tube?

Q-9 A substance X, which is an oxide of a group 2 element, is used intensively in the cement industry. This element is present in bones also. On treatment with water it forms a solution which turns red litmus blue. Identify X and also write the chemical reactions involved.

Q-10 What is an oxidation reaction? Give an example of oxidation reaction. Is oxidation an exothermic or an endothermic reaction?

Q-11 (a) What is the colour of ferrous sulphate crystals? How does this colour change after heating?

- (b) Name the products formed on strongly heating ferrous sulphate crystals. What type of chemical reaction occur in this change?

Q-12 What happens when a piece of :

- (a) zinc metal is added to copper sulphate solution?

(b) aluminium metal is added to dilute hydrochloric acid?

(c) silver metal is added to copper sulphate solution ?

Also, write balanced chemical equation if the reaction occurs.

Q-13 A, B and C are three elements which undergo chemical reactions according to following equations:



Answer the following questions along with proper reason:

(i) Which element is the most reactive?

(ii) Which element is the least reactive?

Q-14 Name two salts that are use in black and white photography. Give equations for the reactions that occur when these are exposed to sunlight.

Q-15 On heating a blue coloured powder of copper (II) nitrate in a boiling tube, copper oxide (black), oxygen gas and a brown gas X is formed.

(a) Write a balanced chemical equation of the reaction.

(b) Identify the brown gas X evolved.

(c) Identify the type of reaction.

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

Q-16 "Oxidation and reduction processes occur simultaneously." Justify this statement with the help of an example.

Q-17 Assertion and reason questions

(a) 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.

(b) Assertion: Zinc reacts with sulphuric acid to form zinc sulphate and hydrogen gas and it is displacement reaction.

Reason: Zinc reacts with oxygen to form zinc oxide

(c) 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.

Q- 18 What is meant by skeletal type chemical equation? What does it represent ? Using the equation for electrolytic decomposition of water, differentiate between a skeletal chemical equation and a balanced chemical equation.

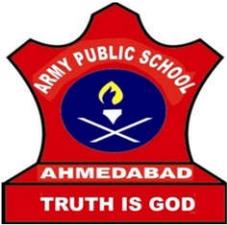
Q-19 A reddish brown coloured metal, used in electrical wires , when powdered and heated strongly in an open china dish , its colour turns black. When hydrogen gas is passed over this black substance, it regains its original colour. Based on the above information answer the following questions.

(a) Name the metal and the black coloured substance formed.

(b) Write the balanced chemical equations for both the reactions.

Q-20 A metal nitrate 'A' on heating gives yellowish brown coloured metal oxide along with brown gas 'B' and a colourless gas 'C' . Aqueous solution of 'A' on reaction with potassium iodide forms a yellow precipitate of compound 'D'. Identify 'A,B,C and D' . Also identify the types of both the reactions. Metal present in 'A' is used in alloy which is used for soldering purposes.

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**ARMY PUBLIC SCHOOL AHMEDABAD CANTT- 2020-2021**

**Worksheet-2**

Class- X

Subject- SCIENCE

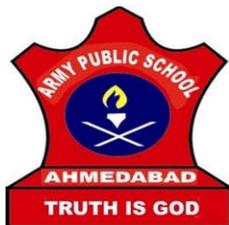
Date –APRIL 2020

**CHAP-14 SOURCES OF ENERGY**

- 1) Name any two nuclear fuels used for the process of nuclear fission.
- 2) Blowing wind carries kinetic energy. Mention the two factors that cause winds to blow.
- 3) Why is biogas plant a safe and efficient method of waste disposal? Justify.
- 4) Mention any one reason due to which most of the thermal power plants are set up near coal or oil fields.
- 5) What is the use of a glass sheet in solar heating devices?
- 6) Give two advantages of smokeless chulhas over traditional chulhas.
- 7) Mention any two differences between the two common designs of solar cooker.
- 8) Why is charcoal considered to be a better fuel than wood?
- 9) Explain how geothermal energy is harnessed to produce electricity.
- 10) What is biomass? Name the reaction that takes place in the biogas plant. What are the main constituents of biogas. List two reasons for considering the biogas an ideal fuel for domestic use.
- 11) What is a wind mill? With the help of a diagram, describe in brief the construction and working of a windmill. Give uses of wind energy.
- 12) Describe the construction and working of a box type solar cooker with the help of a labelled diagram. Give its advantages and limitations.
- 13) Name the major fuel component of biogas. What are their other combustible components? Draw a simple labelled diagram of fixed dome type biogas plant.
- 14) What is the use of the residual slurry and why? State any two impacts on the environment caused due to increase in demand energy. Suggest any two steps to reduce energy consumption.
- 15) Ranvir lives in a village and uses wood as a fuel. He studied in his school that charcoal is better fuel than wood. He decided to use charcoal instead of wood.
  - (a) How can Ranvir obtain charcoal from wood?
  - (b) Why is charcoal considered as better fuel than wood? (Give two reasons)

- 16) Why are gaseous fuels preferred to solid fuels in chemical industries?
- 17) What is solar cell? Which elements are used to make a solar cell?
- 18) Why hydrogen is considered as a cleaner fuel as compared to CNG?
- 19) Ram visited Manikaran sahib in Himachal Pradesh where he saw an experimental geothermal plant. When he saw an experimental geothermal plant. When he saw hot spring he wanted to know more about it. His father explained to him about geothermal energy and hot springs. Now answer the following questions.
- (a) What did Ram's father explain to him about hot springs?
  - (b) Why is geothermal energy generated on a large scale?
  - (c) What is the main advantage of using geothermal energy?
- 20) In each of the following questions , a statement of Assertion is given followed by a corresponding statement of Reason just below it.
- (a) Assertion: Nuclear fusion is used to generate electricity.  
Reason: Nuclear power is not used because it cannot be controlled.
  - (b) Assertion: Biogas is a clean fuel.  
Reason: Animal dung used in biogas plant prevents both air and water pollution.
  - (c) Assertion: Wind farms cannot be set at every place.  
Reason : The velocity required for a windmill to function is about 15 km/h.

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**CHAPTER-2 ACIDS, BASES AND SALTS**

- Q-1 (i) What is the chemical name of washing soda?  
(ii) What happens to the crystals of washing soda when exposed to air?  
(iii) Name three raw materials used in making washing soda by Solvay process?
- Q-2 Name the products formed in each case When :  
(a) hydrochloric acid reacts with caustic soda.  
(b) granulated zinc reacts with caustic soda.  
(c) carbon dioxide is passed into lime
- Q-3 Write the balanced equation involved, when :  
(i) chlorine is passed over dry slaked lime.  
(ii) sodium bicarbonate reacts with dilute hydrochloric acid  
(iii) sodium bicarbonate is heated.
- Q-4 Give the name and formula of two  
(i) strong monobasic acids (ii) two weak dibasic acids
- Q-5 Dry ammonia has no action on litmus paper but a solution of ammonia in water turns red litmus paper blue. Why is it so?
- Q-6 What will happen if a solution of sodium hydrogen carbonate is heated? Give the equation of reaction involved.
- Q-7 Kazi and priyam want to prepare dil HCl .Kazi added conc. HCl to water slowly with Constant stirring & cooling whereas Priyam added water to conc. HCl. Name the Student Who was correct and why?
- Q-8 A compound 'X' on electrolysis in aqueous solution produces a strong base. 'Y' along with two gases 'A' and 'B'. 'B' is used in manufacture of bleaching powder. Identify X, Y, A and B. Write chemical equations.
- Q-9 A first aid manual suggests that vinegar should be used to treat wasp sting and baking soda for bee stings.  
(a) What does this information tell you about the chemical name of the wasp sting?  
(b) If there were no baking soda in the house, what other house hold substances would you use to treat as stings?
- Q-10 Explain why?  
(a) Common salt becomes sticky during the rainy season.  
(b) Blue vitriol change to white upon heating.
- Q-11 A compound X of sodium is commonly used in kitchen for making crispy pakoras. It is also used for curing acidity in the stomach. Identify 'X'. What is its chemical formula?  
State the reaction that takes places when it is heated during cooking?
- Q-12 How is plaster of Paris chemically different from gypsum? How may these be inter converted?  
Write one use of plaster of Paris?
- Q-13 Compound P forms enamel of teeth. It is the hardest substance of the body. It does not dissolve in water but it is corroded when pH in the mouth is below 5.5. How does tooth paste prevent dental decay?

Q-14 Compound such as alcohols and glucose also contain hydrogen but are not categorized as acids. Describe an activity

Q-15 A compound X is bitter in taste. It is a component of washing powder & reacts with dil. HCl to produce brisk effervescence due to colourless, odourless gas Y which turns lime water milky due to formation of Z. When excess of it is passed, it disappears due to formation of P. Identify X, Y, and Z & P.

Q-16 When gas is passed through saturated solution of ammonia in water, two compounds 'X' and 'Y' are formed. 'Y' is used as an antacid and decomposes to form another solid 'Z'. Identify 'X', 'Y', 'Z' and write chemical equations.

Q-17 In each of the following questions, a statement of Assertion is given followed by a corresponding statement of Reason just below it.

(a) Assertion: When an acid reacts with a metal, hydrogen gas is evolved and a corresponding salt is formed.

Reason: When a base reacts with a metal, along with the evolution of hydrogen gas a salt is formed which has a negative ion composed of metal and oxygen.

(b) Assertion: Mixing concentrated acids or bases with water is a highly exothermic process.

Reason: Acids and bases neutralize each other to form corresponding salts and water.

(c) Assertion: Acid-base indicators are dyes or mixtures of dyes which are used to indicate the presence of acids and bases.

Reason: Acidic nature of a substance is due to the formation of  $H^+$  (aq) ions in solution. Formation of  $OH^-$  (aq) ions in solution is responsible for the basic nature of a substance.

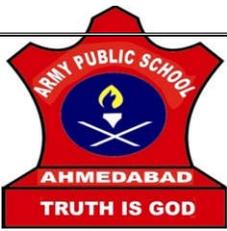
Q-18 Why is HCl a stronger acid than acetic acid?

Q-19 Give three practical applications of neutralization reaction.

Q-20 Give suitable reasons for the following statements:

An aqueous solution of sodium chloride is neutral but an aqueous solution of sodium is basic.

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CHAP-15 OUR ENVIRONMENT

1. What is the role of bacteria and fungi in an ecosystem?
2. Which trophic level has the highest concentration of toxic substances in a food chain?
3. Which compounds are responsible for the depletion of ozone layer?
4. Vegetarian and non vegetarian food habit helps us in getting more energy. Why?
5. Construct an aquatic food chain showing four trophic levels.
6. In a food chain, if 10kJ energy is available to produces, how much energy will be available to secondary consumer to transfer it to tertiary consumer?
7. How does concentration of a pesticide change once it enters a food chain?
8. Using Kulhads as disposable cups to serve tea in train, proved to be a bad idea. Why?
9. How much energy will be available to hawks in the food chain comprising hawk, snake, paddy and mice, if 2000J of energy is available to paddy plants from the sun?
10. What is food chain? Give an example of four step food chain operating in large lake and grassland each.
11. What is the significance of food chain?
12. Distinguish between a food chain and a food web.
13. How does a food web form an important factor of our environment?  
Describe its four benefits.
14. Suggest activities in our daily life which are eco friendly.
15. Distinguish between biodegradable and non-biodegradable waste.
16. “Flow of energy is unidirectional”. Name the first two components of the environment involved in this flow of energy from the sun.
17. Name the two gases other than CFCs which harm the ozone layer. Mention the two gases which have replaced CFCs.

**18.** In a certain study conducted on occurrence of DDT along food chains in an Ecosystem, the concentration of DDT in grass was found to be 0.5 ppm and in man it was 10ppm. Why was the concentration of DDT maximum in case of man?

**19.** You are advised to use eco-friendly appliances like refrigerators and ACs.

Giving reason, explain how these devices are causing harm to environment.

**20.** In each of the following questions , a statement of Assertion is given followed by a corresponding statement of Reason just below it.

(a) Assertion: The waste we generate may be biodegradable or non-biodegradable.

Reason: The disposal of waste use generate is causing serious environment problems.

(b) Assertion: The green plants in a terrestrial ecosystem capture about 1 % of the energy of sunlight that falls on their leaves and convert it into food energy.

Reason: An average of 10 % of the food eaten is turned into its own body and made available for the next level of consumers.

(c) Assertion: The trophic level in a food chain should be limited.

Reason: There is a loss of energy as we go from one trophic level to next this limits the number of trophic levels in a food chain.

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