NEW ERA PUBLIC SCHOOL (2021)

Subject :- Science
Topic :- Acids, Bases and Salts
Class :- 7th
Lesson no :- 07

Solved Assignment of Term-I :-

→ Short Answer Questions :-

D. Answer in brief.

Q1 :- Name one example each of acidic, basic and neutral substances.

Ans :- Vinegar of acidic, Soaps of basic and sodium chloride of neutral are the examples of these substances.

Q2 :- What is an indicator?

Ans :- An indicator is a substance that changes colour in the presence of an acid or a base.

Q3 :- Name three substances that we use as indicators.

Ans :- Turmeric, Purple Cabbage juice and China-Rose are three substances that we use as indicators.

Q4 :- A few drops of purple cabbage juice are added to the colourless solution of a salt. The resulting solution becomes light purple. What does it indicate about the nature of the salt?

Ans :- The nature of the salt is neutral.

Q5:- Does a neutralisation reaction always result in the formation of a neutral salt?

Ans:- No, a neutralisation reaction doesnot always result in the formation of a neutral salt.

Q6:- Why are factory effluents harmful to aquatic organisms?

Ans:- Factory effluents are acidic in nature. These effluents will harm fish and other aquatic life if they are allowed to flow into water bodies without being treated.

→ Long Answer Questions:-

E. Answer in detail.

Q1:- You are given three materials in the form of solutions — citric acid, magnesium hydroxide and sodium sulphate. Describe how you will classify the substances as acidic, basic and neutral using purple cabbage solution.

Ans:- Purple cabbage juice, however changes its colour from purple to red when it comes in contact with an acid and from purple to green with a base. Purple cabbage juice is thus an indicator for an acid as well as for a base.

→Citric Acid	Acid	Colour changes from purple to Red.
→ Magnesium hydroxide	Base	Colour changes from purple to green.
→ Sodium Sulphate	Neutral	No colour change.

Q2:- An acidic substance is mixed with an equivalent amount of a basic substance.

(i) What is the reaction called?

Ans:- The reaction is called neutralisation.

(ii) What are the products formed?

Ans:- Salt

(iii) Is there any absorption or release of energy?

Ans:- Yes

(iv) Under what conditions is the product formed

a) Neutral ☑ (b) Basic ☐ (c) Acidic ☐

Q3:- Write a short note on strong and weak acids?

Ans:- All acids are not alike. The naturally occuring acids listed in Table 7.1 are present in plants and animals and are called organic acids. These are also weak acids.

Acids such as hydrochloric acid (HCl), sulphuric acid (H_2SO_4) and nitric acid (HNO_3) which are commonly used in laboratories, are called mineral acids. These are strong acids.

→ Draw Table 7.1 — Some acids on Pg. no. 70 on book.

Q4:- Describe the properties of bases. Name two bases and their uses.

Ans:- Bases, like acids, have a number of properties that helps us distinguish them.

- Bases are bitter to taste.
- Bases feel soapy and slippery to the touch.
- Bases react with acids to form a salt and

water by neutralisation.
- Bases change litmus (a dye extracted from lichens) blue.

Some common uses of bases.

Name of base	Uses
1) Potassium hydroxide	In alkaline batteries
2) Sodium hydroxide	to manufacture soaps and detergents.

Q5:- What is neutralisation? What decides the nature of a salt formed during a neutralisation reaction?

Ans:- The reaction between an acid and a base is called neutralisation.
- When the acid is stronger, the salt is acidic.
- When the base is stronger, the salt is basic.
- When both the acid and the base are equally strong, the salt is neutral.

Q6:- Farmers sometimes sprinkle white lime powder in their fields. How does this help?

Ans:- When excess chemical fertilisers are used in farming, the soil becomes acidic. To neutralise the acid, farmers add bases like Quicklime (Calcium oxide, CaO) or slaked lime (calcium hydroxide, $Ca(OH)_2$) to the soil.

Similarly, basic or alkaline soil is also not good for many types of plants. To neutralise

alkaline soil, farmers add some organic matter to the soil. This releases acids which neutralise the soil.

→ Objective Type Questions :-

→ Multiple choice questions.

A. Choose the correct option.

1. c
2. b
3. d
4. a
5. d
6. c
7. c
8. d
9. a
10. b

B. Fill in the blanks.

1. acid
2. Lactic
3. strong
4. concentration
5. indicator
6. neutral
7. turmeric, purple cabbage juice
8. formic

C. Say whether the statements are true or false.

1. F
2. T
3. T
4. F
5. F
6. F
7. F

Topic :- Weather, Climate and Animal Adaptations.

Lesson no :- 8

→ Short Answer Questions :-

D. Answer in brief.

Q1 :- Define weather.

Ans:- Weather describes the state of the atmosphere over a short period of time.

Q2:- Who are meteorologists? What do they study?

Ans:- Scientists who study and predict weather are known as meteorologists. Meteorologists study patterns in weather and the several factors that affect it.

Q3:- Name four elements of weather?

Ans:- The four elements of weather are Temperatures, humidity, precipitation and winds.

Q4:- What instrument is used to measure rainfall?

Ans:- Rainfall is measured with the help of a rain gauge.

Q5:- Name the two adaptations that are seen in many animals found in the polar regions.

Ans:- The two adaptations that are seen in many animals found in the polar regions are Hibernation and Migration.

Q6:- What is migration? Give an example of an animal that migrates?

Ans:- Migration is the movement of animal in search of food, warmth and safe places to raise their young e.g. Arctic tern.

Q7:- Why are there only a few large animals in the deserts?

Ans:- There are relatively very few large mammals in this region because they are not capable of storing sufficient water and withstanding the heat.

Q8:- Why do tropical forests have a great variety of plants and animals?

Ans:- Tropical rainforests are located near the equator. They have a hot and wet climate. They support a greater number and variety of animals compared to any other region because of characteristics such as warm weather, constant supply of water and the availability of a wide variety of food.

→ Long Answer Questions :-

E. Answer in detail.

Q1:- Write a short note on the factors that affect climate.

Ans:- There are many factors that affect climate.

1. Latitude (distance from the equator) :- The rays of sunlight fall on the regions near the equator directly while they hit the regions near the poles in a slanted way. This is the reason why the regions near the equator are warmer than the regions near the poles.

2. Altitude (height above sea level):- The higher above sea level a place is, the cooler it is. For example, a hill station is much cooler than a town in the plains.

3. Distance from a waterbody :- Places near a large waterbody donot have large variations in temperature when compared to places that are far away from a waterbody.

4. Ocean currents :- Warm currents make a place warmer while cool currents make it cool.

Q2:- How are polar bears and penguins adapted to live in very cold regions?

Ans:- Adaptation in Penguins :-

- Emperor penguins and musk oxen huddle in groups to stay warm.
- The dark coloured feathers on the penguin's back absorb heat from sunlight to keep it warm. Penguins do not fly but are good swimmers.

Adaptation in Polar bear :-

- Polar bears have large, wide paws with which to walk on the snow. The fur on the bottom of their paws also helps them walk on ice.
- Polar bears are good swimmers. They close their nostrils underwater so that water cannot get in. Their long, coarse fur is oily and thus helps them to shake off the water when they come out of the water after swimming.

Q3:- Briefly describe some adaptations seen in animals that live in deserts.

Ans:- A desert is an area with very little precipitation. Rainfall is usually very low or concentrated in short bursts between long rainless periods.

- Some desert animals remain inactive during the day. They are active only at night when the

temperature is low, so that they don't lose their precious body water. Animals that have this adaptation are said to be nocturnal.

- Some toads and frogs seal themselves in burrows with gelatinous (jelly-like) secretions and sleep for eight or nine months until it rains.
- Fennec foxes are nocturnal. They have large ears that help them to release body heat and thus keep them cool.
- Ostriches have long legs and flat feet that help them to run fast.
- Meerkats have dark patches of fur around their eyes.
- Camels can survive for a long time without eating or drinking. They can store food in the form of fat in their humps. When a camel has access to water, it can drink nearly 40 litres in 10 minutes. Camels also excrete very little water as urine. They have long eyelashes that help to keep sand out of their eyes.

Q4:- Describe some adaptations seen in animals that live in rainforests.

Ans:- Tropical rainforests are located near the equator. They have a hot and wet climate. They support a greater number and variety of animals compared to any other region because of characteristics such as warm weather, constant supply of water.

and the availability of a wide variety of food.

- Parrots have specialised feet with two curling front toes and two curling back toes, which help them hold on to branches.
- Monkeys use their arms and legs and sometimes even their tails to swing from branch to branch.
- The red-eyed tree frog lives on trees. It has sticky pads on its feet that help it to climb trees.
- Toucans are birds that have a long, large bill or beak. The beak is adapted to reach nuts on branches that are too small to support the bird's weight.
- Jaguars have spots on their bodies. The spots help them camouflage.
- Elephants have many adaptations that help them to live in the hot and wet climate of the rainforests. They have large ears, which are used to fan and cool their bodies in the hot and humid rainforests.

→ Objective Type Questions :-

Multiple Choice Questions.

A. Choose the correct option.

1. a	4. a	7. a
2. b	5. b	8. a
3. b	6. c	

B. Fill in the blanks.

1. meteorology
2. Humidity
3. hotter
4. Arctic, Antarctica
5. camel
6. tropical
7. sloth
8. fungal colony

C. Say whether the statements are true or false.

1. F
2. T
3. T
4. F
5. F
6. F
7. T
8. T

Topic :- Respiration

Lesson no :- 10

→ Short Answer Questions :-

D. Answer in brief.

Q1:- Which process helps the body get energy from food?

Ans:- Respiration helps the body get energy from food.

Q2:- What is a bronchiole?

Ans:- In the lungs, the bronchi branch into smaller tubes known as bronchioles.

Q3:- What is an alveolus?

Ans:- The structure of the lungs enables gases to

move rapidly between the air and blood. The lungs have a large surface area. They are composed of millions of tiny air sacs called alveoli (singular: alveolus), which are present at the end of the bronchioles.

Q4:- What role does Oxygen play in respiration?

Ans:- Oxygen is the vital resource for making energy in a process called cellular respiration. They use oxygen and glucose (a sugar found in the foods we eat) and convert them to ATP (Adenosine triphosphate) or cellular energy and CO_2.

Q5:- How do frogs breathe?

Ans:- Some animals, such as amphibians, use more than one organ for breathing. Frogs breathe through gills while they are tadpoles. Adult frogs breathe mainly with lungs and also exchange gases with the environment through their moist skin.

Q6:- When does anaerobic respiration occur in the human body?

Ans:- During vigorous exercise, anaerobic respiration occur in the human body.

Q7:- How do plants take in air?

Ans:- Plants take in air through stomata.

→ Long Answer Questions:-

E. Answer in detail.

Q1:- What is the difference between external and internal respiration?

Ans:- External respiration or breathing involves the exchange of two gases — oxygen and carbondioxide. Oxygen is taken in from the environment, and carbondioxide and water-vapour are sent out. Specific organs, tissues or cells are used for external respiration.

Internal or cellular respiration involves the release of energy in cells. Carbondioxide and water-vapour are waste products commonly produced during this process. Cellular respiration takes place in all living cells throughout the body.

Q2:- Explain the mechanism by which air is taken in and driven out of the lungs.

Ans:- Air enters and leaves the lungs through the processes of inhalation and exhalation, respectively.

Inhalation:- The process of breathing in air is called inhalation. During inhalation, the muscles present between the ribs contract and move the ribs upwards and outwards. The diaphragm contracts and becomes flat. The breastbone moves outwards. As a result, the volume of the chest cavity increases. This lowers the pressure in the lungs and the air from outside the body flows into the lungs.

Exhalation:- The process of breathing out air is called exhalation. During exhalation, the muscles between the ribs relax, and the ribs and the breastbone return to their original positions. The diaphragm

also relaxes and becomes dome-shaped. As a result, the volume of the chest cavity decreases. This increases the pressure inside the lungs and forces the air out of the lungs.

→ Draw Diagram (Fig 10.3) — During inhalation and (Fig 10.4) — During exhalation on Pg. no 109 on book.

Q3:- Draw a labelled diagram of an experiment to prove that the air you breathe out contains carbondioxide.

Ans:- Aim :- To show that exhaled air contains carbondioxide.

Materials required :- two conical flasks, lime water, two two-holed corks, glass tubes, clips.

Method:-

1. Take some lime water in the two conical flasks and set up the apparatus as shown in Fig.
2. Breathe in and out of the mouthpiece. While inhaling, keep clip A open and clip B closed. Thus the inhaled air passes through flask A before being inhaled.
3. While exhaling, keep clip A closed and clip B open. Thus the exhaled air passes through flask B before mixing with the atmosphere. What do you notice after breathing through the apparatus for a few minutes?

Observations and conclusions:- The lime water in flask B becomes cloudy (milky). This is because of the.

higher concentration of carbondioxide in the air that we breathe out.

→ Draw Diagram (Fig 10.6) — Presence of CO_2 in exhaled air on Pg. no 110 on book.

Q4:- What is the difference between aerobic respiration and anaerobic respiration?

Ans:-

Aerobic respiration	Anaerobic respiration
1. The process by which organisms respire in the presence of oxygen is called aerobic respiration.	1. The process by which organisms respire in the absence of oxygen is called anaerobic respiration.
2. This reaction releases a large amount of energy. It can be written as follows. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + energy$	2. This reaction releases very little energy. Anaerobic respiration produces less energy than aerobic respiration. e.g. Yeast cells convert glucose into carbondioxide and ethanol, with the release of energy, without using oxygen. glucose → ethanol + CO_2 + energy

→ Draw Diagram (Fig 10.1) — The human respiratory system. on Pg. no 100

→ Objective Type Questions:-

Multiple choice Questions:-

A. Choose the correct option:-

1. d
2. c
3. c
4. c
5. b
6. c
7. a
8. b
9. c
10. d

B. Fill in the blanks.

1. pharynx
2. cellular
3. inhalation
4. inhalation
5. gills
6. spiracles
7. external
8. oxygen
9. ethanol
10. photosynthesis.

C. Say whether the statements are true or false.

1. F
2. F
3. T
4. T
5. F
6. T
7. F
8. F
9. F
10. T

Topic :- Transport in Animals and Plants

Lesson no :- 11

→ Short Answer Questions :-

E. Answer in brief.

Q1:- What is the function of plasma?

Ans:- Plasma is made up of more than 92% water

and contains glucose, other dissolved nutrients and substances such as hormones. It transports these substances through the blood. It also contains proteins that help the blood to clot.

Q2:- What is the function of a White blood cell?

Ans:- The function of WBC is to protect the body against infection by destroying foreign material such as bacteria.

Q3:- Name the four chambers of the heart?

Ans:- The four chambers of the heart are left auricle, right auricle, left ventricle and right ventricle.

Q4:- Why is it important to have valves in the heart?

Ans:- It is important to have valves in the heart because they prevent the blood from flowing back.

Q5:- Which artery doesnot carry oxygenated blood?

Ans:- Pulmonary artery doesnot carry oxygenated blood.

Q6:- Why is excretion necessary?

Ans:- The process of removing waste products produced in the cells of living organisms is called excretion. When these toxic materials are not removed from the body, they get mixed with blood and can damage the cells of the body. Hence it is necessary to remove poisonous waste materials from our body.

Q7:- When would dialysis be required?

Ans:- Dialysis is an artificial process by which

waste products and excess water are removed from the blood. This method is used if the Kidneys dont perform their functions properly. During dialysis, a machine is used to remove wastes from a patient's blood.

Q8:- Which plant tissues transport water, minerals and food?

Ans:- In plants, water and minerals are transported through special tissues called Xylem and food is transported through phloem.

Q9:- Define osmosis.

Ans:- Osmosis is the passage of solvent molecules from a weaker solution into a stronger solution through a partially permeable membrane.

Q10:- What is guttation?

Ans:- Some herbs and shrubs send out water through small pores on their leaf edges and tips by a process called guttation.

→ Long Answer Questions:-

F. Answer in detail.

Q1:- What are the functions of blood?

Ans:- Blood is the body's major medium of transport and performs the following functions that are essential for life.

- It carries oxygen, which is essential for cellular respiration, to all parts of the body.

- It carries carbondioxide from the tissues to the lungs for removal.
- It carries digested food material to the cells of the body.
- It also carries wastes such as urea to the kidneys for removal.

Q2:- Give three differences between red blood cells and white blood cells.

Ans:-

Red Blood Cells	White Blood Cells
1. The RBC's are disc-shaped cells whose main function is to carry oxygen and carbon-dioxide.	1. White blood cells (WBC's) are colourless and larger than RBC's.
2. There are above five million RBC's in one cubic millimetre of blood.	2. However, they are fewer in number than RBC's. There are around 4500–11,000 WBC's in one cubic millimetre of blood.
3. The red colour of the blood is due to the RBC's. The RBC's contain haemoglobin, which gives blood its characteristic red colour in humans.	3. Their function is to protect the body against infection by destroying foreign material such as bacteria.

Q3:- Distinguish between arteries and veins.

Ans:-

Arteries	Veins
1. They carry blood away from the heart to the organs and tissues.	1. They carry blood to the heart from the organs and tissues.
2. Their walls are thick and elastic.	2. Their walls are thin.
3. They transport oxygenated blood (except the pulmonary artery)	3. They transport deoxygenated blood (except the pulmonary vein)
4. They have a narrow passageway.	4. They have a wide passageway.
5. They donot have valves.	5. They have valves.

Q4:- Draw a labelled diagram showing the structure of the heart. Show the direction of blood flow with arrows.

Ans:- Diagram (Fig 11.5) - Structure of the heart on Pg. no 123 on book.

Q5:- Draw a labelled diagram of the human urinary system. Describe the function of each part.

Ans:- The urinary system is the main excretory system of the human body. It consists of the following organs: the kidneys, ureters, urinary bladder

and urethra.

The Kidneys are the main organs of this system. The blood brings wastes to the kidneys through the renal artery. Each kidney has a million tiny filtering units called nephrons, which filter and remove the wastes (mostly urea) from the blood. The 'cleaned' blood flows out of the kidneys through the renal vein.

The filtered wastes and excess water form the urine, which is sent into the urinary bladder through connecting tubes called ureters. Urine is expelled from the body through a small tube called the urethra. The kidneys of an adult produce 1-2 litres of urine each day. The bladder can expand to hold up to about 0.5 litre of urine.

→ Draw Diagram (Fig 11.10) — The human urinary system on Pg. no 126 on book.

Q6:- Describe the process by which water in the soil reaches the xylem tissue in plants.

Ans:- Plants absorb water from the soil with the help of root hairs. The water in the soil is a weak solution of salts, while the solution in the cells that make up the root hairs is stronger. Therefore, water passes from the soil into the root hairs by osmosis.

As water enters the root hair cells, it dilutes the solution in the cells. The solution present in the adjacent cells is now stronger. Therefore, water moves into the adjacent cells by osmosis. In this manner, water moves across the entire root and eventually reaches the xylem.

Q7:- Describe how transpiration helps in the transport of water in a plant.

Ans:- The diffusion of water vapour out into the atmosphere through the stomata is called transpiration. During transpiration, the leaf cells lose water. This causes the entry of water into the leaf cells from the veins through osmosis. This causes more water to be pulled up from the roots. This is called transpiration pull.

Transpiration pull works because water forms a continuous column in the xylem. Minerals absorbed by the roots are taken along through this column of water to reach the leaves. Transpiration also cools the plant.

If the amount of water lost due to transpiration is more than the amount of water that is pulled up from the roots, the plant wilts.

→ Objective Type Questions :-

Multiple choice Questions.

A. Choose the correct option.

1. c
2. a
3. d
4. b
5. c
6. d
7. c
8. c
9. b
10. b

B: Fill in the blanks :-

1. plasma
2. haemoglobin
3. Platelets
4. capillaries
5. Veins
6. Values
7. auricles, ventricles
8. pulse
9. kidneys
10. water, minerals, food
11. transpiration.

C. Say whether the statements are true or false.

1. T
2. T
3. F
4. T
5. T
6. T
7. F
8. T
9. F
10. F

D. Match the words in the two columns.

KEY:-

1. Carries oxygenated blood away from the lungs.
2. Carries deoxygenated blood to the heart.
3. pumps oxygenated blood into the aorta.
4. Carries deoxygenated blood to the lungs.
5. Carries oxygenated blood to the parts of the body.
