

RAWALPORA SRINAGAR KASHMIR Contact No.: 0194-3565276 Winter Assignment

(Class – 7th)

#### **Subject: Science**

FA-1 and FA-2

### **Chapter: Nutrition in Plants**

#### **Exercise Questions**

### 1. Why do organisms take food?

Solution: All living organisms need energy to survive and to carry their life processes. Plants prepare their food and acquire nutrients from abiotic components like soil, air, water and sunlight. On the other hand, animals get food either from plants or other animals to obtain nutrients; hence, organisms need to take food to acquire nutrients and energy.

### 2. Distinguish between a parasite and a saprophyte.

Solution: Saprophytes

#### Parasites

Acquire nutrients from dead and decaying matter. Parasites live on or in a host and get their food at the expense of their host.

Example: Fungi

Example: Roundworm

### 3. How would you test the presence of starch in leaves?

Solution: Take two potted plants of the same kind. Keep one in the dark for 72 hours and the other in the sunlight. Perform the iodine test with the leaves of both plants as given below. Now, leave the pot, which was earlier kept in the dark, undisturbed for 3–4 days and perform the iodine test again on its leaves.

lodine test:

Put iodine solution on the leaf.

Observation:

Blue-black colour will be observed on the leaves of the plant kept in sunlight, which indicates the presence of starch.

Blue-black colour will not be observed on the leaves of plants kept in the darkroom. This indicates the absence of starch.

### 4. Give a brief description of the process of synthesis of food in green plants.

Solution: Green plants use a process called photosynthesis to prepare their food. The process is as follows

Water is taken from the roots of the plant, and it is transported to the leaves of the plant.

Carbon dioxide from the air enters the leaves through pores called stomata. This diffuses the cell containing chlorophyll.

Water molecule is broken down into Hydrogen and Oxygen with the help of sunlight.

Hydrogen combines with Oxygen and Hydrogen to form carbohydrates.

Photosynthesis is represented by the following equation.

carbon dioxide + water

sunlight

—→ glucose + oxygen

chlorophyll



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### 6. Fill in the blanks.

- (a) Green plants are called <u>autotrophs</u> since they synthesise their food.
- (b) The food synthesised by plants is stored as <u>starch</u>.
- (c) In photosynthesis, solar energy is absorbed by the pigment called chlorophyll.
- (d) During photosynthesis, plants take in <u>carbon dioxide</u> and release <u>oxygen</u> gas.

### 7. Name the following.

- i) A parasitic plant with a yellow, slender and branched stem.
- Sol. Cuscuta
- ii) A plant that is partially autotrophic.
- Sol. Pitcher plant
- iii) The pores through which leaves exchange gases.

Sol. Stomata

### 8. Tick the correct answer.

- (a) Cuscuta is an example of:
- (i) autotroph
- (ii) parasite
- (iii) saprotroph
- (iv) host
- Sol. Parasite

### (b) The plant which traps and feeds on insects is:

- (i) Cuscuta
- (ii) China rose
- (iii) pitcher plant
- (iv) rose
- Sol. Pitcher plant

### 9. Match the items given in Column I with those in Column II.

S	ol	ut	io	n	:

Column-I Chlorophyll

Nitrogen

Cuscuta

Column-II Leaf Rhizobium Parasite

Pitcher plant

- Animals Heterotrophs
- Insects



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### 10. Mark 'T' if the statement is true and 'F' if it is false.

- (i) Carbon dioxide is released during photosynthesis. (T/F)
- Sol. False
- (ii) Plants which synthesise their food are called saprotrophs. (T/F)
- Sol. False
- (iii) The product of photosynthesis is not a protein. (T/F)
- Sol. True
- (iv) Solar energy is converted into chemical energy during photosynthesis. (T/F)
- Sol. True

### **11. Choose the correct option from the following:**

- Which part of the plant takes in carbon dioxide from the air for photosynthesis?
- (i) Root hair (ii) Stomata (iii) Leaf veins (iv) Petals
- Solution: Stomata

### **12.** Choose the correct option from the following:

Plants take carbon dioxide from the atmosphere mainly through their:

(i) roots (ii) stem (iii) flowers (iv) leaves

Solution: Leaves

# 13. Why do farmers grow many fruits and vegetable crops inside large greenhouses? What are the advantages to the farmers?

Sol. Farmers grow many fruits and vegetable crops inside large greenhouses because it protects crops from external climatic conditions and provides suitable conditions for the growth of crops.

Advantages to farmers while growing fruits and vegetable crops inside greenhouses are

It protects crops from diseases and adverse climatic conditions.

It protects crops from wind and rodents.

It helps them to grow plants during unfavorable conditions.





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### Chapter: Nutrition in Animals

### **Exercise Questions**

### 1. Fill in the blanks:

(a) The main steps of nutrition in humans are ingestion, digestion, absorption, assimilation and egestion.

- (b) The largest gland in the human body is liver.
- (c) The stomach releases hydrochloric acid ande <u>digstive</u> juices which act on food.
- (d) The inner wall of the small intestine has many finger-like outgrowths called villi.
- (e) Amoeba digests its food in the food vacuole.

### 2. Mark 'T' if the statement is true and 'F' if it is false:

- (a) Digestion of starch starts in the stomach. (T/F)
- Sol. False
- (b) The tongue helps in mixing food with saliva. (T/F)
- Sol. True
- (c) The gall bladder temporarily stores bile. (T/F)
- Sol. True

(d) The ruminants bring back swallowed grass into their mouth and chew it for some time. (T/F)

Sol. True

### 3. Tick ( $\checkmark$ ) mark the correct answer in each of the following:

- (a) Fat is completely digested in the
- (i) stomach (ii) mouth (iii) small intestine (iv) large intestine
- Sol. Small intestine
- (b) Water from the undigested food is absorbed mainly in the
- (i) stomach (ii) food pipe (iii) small intestine (iv) large intestine
- Sol. Large intestine

### 4. Match the items of Column I with those given in Column II:

Column- I	Column- II
Food components	Product(s) of digestion
Carbohydrates	Sugar
Proteins	Amino acids
Fats	Fatty acids and glycerol



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### 5. What are villi? What is their location and function?

Sol. Villi are the finger-like projections present in the small intestine of our digestive system. The villi increase the surface area for absorption of the digested food.

### 6. Where is the bile produced? Which component of the food does it help to digest?

Sol. Bile juice is produced in the liver. It helps in the digestion of fats by breaking large fat globules into smaller ones.

### 7. Name the type of carbohydrate that can be digested by ruminants but not by humans. Give the reason also.

Sol. Cellulose is the carbohydrate that can be digested by ruminants but not by humans because humans lack cellulase enzyme required to digest the cellulose.

### 8. Why do we get instant energy from glucose?

Sol. We get instant energy from glucose as it is a simple sugar which is easily absorbed into the blood whereas other carbohydrates are first broken down into glucose and then absorbed.

### 9. Which part of the digestive canal is involved in:

- (i) absorption of food small intestine
- (ii) chewing of food <u>Buccal cavity</u>
- (iii) killing of bacteria Stomach
- (iv) complete digestion of food Small intestine
- (v) formation of faeces Large intestine

# 10. Write one similarity and one difference between nutrition in amoeba and human beings.

Solution: Similarity: Both amoeba and human beings follow the holozoic type of nutrition.

Difference: Humans intake food through buccal cavity. In amoeba food is ingested through pseudopodia.

### 11. Match the items of Column I with suitable items in Column II

Solution:

Column-I	Column-II
a) Salivary gland	(iii) Saliva secretion
b) Stomach	(iv) Acid release
c) Liver.	(i) Bile juice secretion
d) Rectum	(ii) Storage of undigested food
e) Small intestine	(v) Digestion is completed

f) Large intestine (vi) Absorption of water

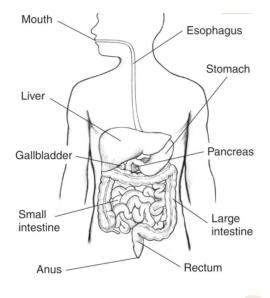


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#### Q12. Label Fig. 2.11 of digestive system.



### 13. Can we survive only on raw, leafy vegetables/grass? Discuss.

Sol. No, we cannot survive only on raw, leafy vegetables because they mainly consist of Cellulose which cannot be digested by us due to lack of cellulose-digesting enzyme in our body.

### Chapter: Heat

#### **Exercise Questions**

# 1. State similarities and differences between the laboratory thermometer and the clinical thermometer.

Solution.

### Similarities:

Both the thermometers are made of glass and consist of a long narrow glass tube.

Both of them have bulb at one end.

Bulbs of both the thermometers contain mercury.

Both of them have celcius scale.

#### Differences:

Temperature range of clinical thermometer is 35 to 42 0 c while as temperature range is of laboratory thermometer is -10 to 110 0 c.

Clinical thermometer is used to measure human body temperature the thermometer is used to measure temperature in the laboratory.

Clinical thermometer has a kink which prevents immediate backflow of mercury while as laboratory thermometer does not have a kink.



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### 2. Give two examples each of conductors and insulators of heat.

Conductors: Steel and aluminium

Insulators: Rubber and Wood

### 3. Fill in the blanks:

Solution:

- (a) The hotness of an object is determined by its temperature.
- (b) Temperature of boiling water cannot be measured by a <u>clinical</u> thermometer.
- (c) Temperature is measured in degree Celcius.
- (d) No medium is required for transfer of heat by the process of radiation.
- (e) A cold steel spoon is dipped in a cup of hot milk. Heat is transferred to its other end by the process of conduction.
- (f) Clothes of <u>dark</u> colours absorb heat better than clothes of light colours.

### 4. Match the following:

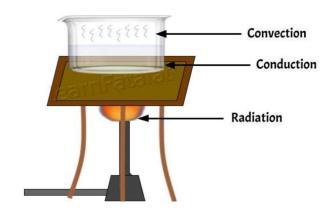
Solution:

Column-I	Column-II
(i) The land breeze blows during	(d) night
(ii) The sea breeze blows during	(c) day
(iii) Dark coloured clothes are preferred during	(b) winter
(iv) Light coloured clothes are preferred during	(a) summer

# 5. Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing.

Sol. Wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing because air gets trapped in between the layers. As air is a bad conductor of heat it does not allow the heat to escape from the body.

6. Look at Fig. 4.13. Mark where the heat is being transferred by conduction, by convection and by radiation.





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## 7. In places of hot climate it is advised that the outer walls of houses be painted white. Explain.

Sol. In places of hot climate, it is advised that the outer walls of houses be painted white because white colour is a poor absorber of heat and reflects back most of the heat that is incident on it, this helps in keeping the house cool.

# 8. One litre of water at 30°C is mixed with one litre of water at 50°C. The temperature of the mixture will be

### (a) 80°C (b) more than 50°C but less than 80°C (c) 20°C (d) between 30°C and 50°C

Sol. (d) The temperature of the mixture will be between 30°C and 50°C because hot water loses heat and simultaneously cold water gains heat. This keeps the temperature in between 30°C and 50°C.

### 9. An iron ball at 40°C is dropped in a mug containing water at 40°C. The heat will

- (a) flow from the iron ball to water.
- (b) not flow from the iron ball to water or from water to the iron ball.
- (c) flow from water to the iron ball.
- (d) increase the temperature of both.

Sol. (b)not flow from the iron ball to water or from water to the iron ball because both of them have the same temperature of 40°C.

### 10. A wooden spoon is dipped in a cup of ice cream. Its other end

- (a) becomes cold by the process of conduction.
- (b) becomes cold by the process of convection.
- (c) becomes cold by the process of radiation.
- (d) does not become cold.
- Sol. (d) does not become cold because wood is a bad conductor of heat.

# 11. Stainless steel pans are usually provided with copper bottoms. The reason for this could be that

- (a) copper bottom makes the pan more durable.
- (b) such pans appear colourful.
- (c) copper is a better conductor of heat than stainless steel.
- (d) copper is easier to clean than stainless steel.
- Sol. (c) copper is a better conductor of heat than stainless steel.



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### Chapter: Acids, Bases And Salts

#### Exercise

### (i) Fill in the blank spaces.

- 1. The acid found in lemons is <mark>citric</mark> acid.
- 2. The basis have a bitter taste and soapy touch.
- 3. The sting of the ants contains formic acid.
- 4. Sulphuric acid is highly corrosive acid.
- 5. Acidic soils are neutralized with slaked lime.
- (ii) Statements given below are incorrect write the correct statements.
- 1. Sulphuric acid is an example of an organic acid.

Ans. Sulphuric acid is an example of a mineral acid.

2. Blue litmus paper turns red in a basic solution.

Ans. Blue litmus paper does not change its colour in a basic solution.

3. China rose solution turns green in citric acid solution.

Ans. China rose solution turns deep pink in citric acid solution.

### 4. Formic acid is found in the sting of a grasshopper.

Ans. Formic acid is found in the sting of an ant.

### 5. During neutralization and an acid reacts with salt to form water and base as products.

Ans. During neutralization an acid reacts with a base to form water and salt as products.

### (iii) Write true of false in front of the following statements.

1. Tooth decay is caused by the presence of basic substance in mouth. (False)

2. The substances which shows different colours in acids and bases are called indicators. (True)

- 3. Milk of magnesia and slaked lime are the examples of neutral substances. (False)
- 4. Acid rain is caused by the excess of carbon dioxide in air. (False)
- 5. Potassium hydroxytons turns blue litmus red. (False)



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6. Most of the fruits contain organic acids. (True)

### Answer the following questions.

### Q1. Name three organic and three inorganic acids.

Sol. The three organic acids are citric acid, tartaric acid and oxalic acid.

The three inorganic acids are sulphuric acid, nitric acid and hydrochloric acid.

# Q2. What are indicators? Name any three indicators and state the colour change which takes place in acids and bases.

Ans. Substances which change their colour on coming in contact with other substances are called indicators. The three indicators and their effect on acids and bases are as follows:

i) China rose: it's colour changes to green in basic solution and dark pink in acidic solution.

ii) Phenolphthalein: it changes to the pink in basic solution and remains colourless in an acidic solution.

iii) Litmus: the neutral litmus solution turns red in acidic solution and blue in basic solution.

### Q3. What are neutral substances? Give examples of two neutral substances.

Sol. Substances which are neither acid, nor basic and do not effect indicators are called neutral substances.

Distilled water and common salt solutions are examples of neutral substances. We will pour

# Q4. You are given three unlabelld bottles A, B and C containing colorless solutions, such that one of them is acid, the other being basic and neutral. How will you distinguish between them by using China rose as an indicator?

Sol. By using China rose as an indicator, the solution of bottle which turns dark pink in colour is acidic in nature. The solution of bottle which turns green in colour is basic solution & the one whose colour does not change is neutral in nature.

# Q5. What do you understand by the term neutralization? Describe an activity in which neutralization of hydrochloric acid takes place with sodium hydroxide using phenolphthalein as an indicator.

Ans. Neutralization is an acid-base reaction in which an acid reacts with a base to form salt and water. The neutralisation reaction is best represented as:

Acid + Base  $\rightarrow$  Salt + Water



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### **Neutralisation Reaction**

When a strong acid reacts with a strong base the resultant salt is neither acidic nor basic in nature i.e. it is neutral. For example when HCl (Hydrochloric acid), a strong acid, reacts with NaOH, a strong base, the resulting salt is sodium chloride and water.

 $HCI + NaOH \rightarrow NaCI + H2O$ 

By using phenolphthalein as an indicator in the sodium chloride solution the solution their is no change in colour, indicating that the solution is neutral in nature.

### Explain why:

### a) Farmers at slaked lime to acidic soils.

Sol. If the soil is acidic in nature, it not only decreases the solubility of minerals but also affects the availability of the nutrients. Thus, for converting the acidic soil into neutral soil, a small quantity of quicklime or slaked lime solution is added. Lime is alkaline in nature, which will neutralize the soil.

### b) Soap solution or baking soda paste is applied on the part of body strong by a bee.

Sol. Bee-stung injects acid in our body. Baking soda is a base. Hence, baking soda should be rubbed on bee-stung area to neutralize the effect of the acid.

### c) Factory wastes and city sewerages is neutralized before discharging in rivers.

Sol. Factory wastes contain acids which if untreated and discharged into water bodies will cause harm to fish and other aquatic organisms living in water bodies. Therefore, they should first be treated with basic substances to neutralise them and then discharged into water bodies.

### d) Antacids are used for living stomach activity.

Sol. Antacids are used for relieving stomach activity because they neutralize excess stomach acid, which is often the cause of discomfort like heartburn and indigestion; essentially, they act as a base to counteract the acidity in the stomach by neutralizing it through a chemical reaction called neutralization.

### Q7. Give four differences between acids and alkalis.

Sol. The four differences between st and alkalis are:

i) Acids have PH value below 7 while alkalis have PH value about 7.

ii) Acids are sticky in touch while as alkalis are slippery in touch.



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- iii) Acids are sour in taste while as as alkalis are bitter in taste.
- iv) Acids are neutralized by alkalis while as alkalis or neutralized by acids.
- Q8. Write an equation when hydrochloric acid neutralise sodium hydroxide.
- Sol. HCl + NaOH  $\rightarrow$  NaCl + H2O
- MCQ's: choose the correct answer.
- 1. Name the acid present in the sting of ants.
- Sol. Formic acid
- 2. Blue litmus turns red in which solution:

Sol. Acidic solution

3. Which of the following is not a mineral acid?

Sol. Citric acid

4. When few drops of China rose solution is added to shampoo taken in test tube the colour of the solution becomes:

Sol. Green



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### **Chapter: Physical And Chemical Change**

#### **Exercise Questions**

**1.** Classify the changes involved in the following processes as physical or chemical changes.

- (a) Photosynthesis
- (b) Dissolving sugar in water
- (c) Burning of coal
- (d) Melting of wax
- (e) Beating aluminium to make aluminium foil
- (f) Digestion of food

Solution:

- a) Chemical change
- b) Physical Change
- c) Chemical change
- d) Physical Change
- e) Physical Change
- f) Chemical change

## 2. State whether the following statements are true or false. In case a statement is false, write the corrected statement in your notebook.

- (a) Cutting a log of wood into pieces is a chemical change. (True/False)
- (b) Formation of manure from leaves is a physical change. (True/False)
- (c) Iron pipes coated with zinc do not get rusted easily. (True/False)
- (d) Iron and rust are the same substances. (True/False)
- (e) Condensation of steam is not a chemical change. (True/False)
- Solution:
- a) False
- b) False
- c) True
- d) False
- e) True
- Q3. Fill in the blanks.

(a) When carbon dioxide is passed through lime water, it turns milky due to the formation of <u>Calcium carbonate</u>.



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(b) The chemical name of baking soda is <u>Sodium hydrogen carbonate</u>.

(c) Two methods by which rusting of iron can be prevented are painting and galvanisation.

(d) Changes in which only <u>physical</u> properties of a substance change are called physical changes.

(e) Changes in which new substances are formed are called chemical changes.

# 4. When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.

Solution:

When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a carbon dioxide gas. This is a chemical change.

Lemon juice + Baking soda  $\rightarrow$  Carbon dioxide + other substances

5. When a candle burns, both physical and chemical changes take place. Identify these changes. Give another example of a familiar process in which both chemical and physical changes take place.

Sol. Melting of wax is a physical change.

Burning of gas with evolution of CO2 is a chemical change.

Digestion of food also involve the physical as well as a chemical change.

Breakdown of larger food molecules into simpler ones is a physical change.

The chemical change is the digestion of food by the action of HCl and enzymes.

### 6. How would you show that the setting of curd is a chemical change?

Solution: The setting of curd is a chemical change because curd cannot be turned back to milk. The properties of milk and curd are different.

# 7. Explain why burning wood and cutting it into small pieces are considered two different types of changes.

Solution: Cutting wood is a physical change as it does not change the nature of the wood. On the other hand, the burning of wood is a chemical change as wood is converted to charcoal with the liberation of CO2.

### 8. Describe how crystals of copper sulphate are prepared.

Solution:

Crystals of copper sulphate are prepared using the crystallisation method, which is described as follows:

Take a cupful of water in a beaker.

Add a few drops of dilute sulphuric acid to this.

Heat the water, and when it starts boiling, add copper sulphate powder while still stirring.



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Add the copper sulphate powder till the solution becomes saturated. Filter into a china dish and allow it to cool.

The solution should be kept undisturbed. Slowly, the crystals of copper sulphate separate out.

### 9. Explain how painting an iron gate prevents it from rusting.

Solution:

Rusting of iron requires contact with water (moisture) and oxygen. By painting an iron gate, we prevent contact between iron, Oxygen and water (moisture); this helps in preventing rusting of iron.

### 10. Explain why rusting of iron objects is faster in coastal areas than in deserts.

Solution:

Rusting of iron requires contact with water (moisture) and oxygen. In coastal areas, humidity is more in comparison to that in deserts; hence, rusting of iron objects is faster in coastal areas than in deserts.

11. The gas we use in the kitchen is called liquified petroleum gas (LPG). In the cylinder, it exists as a liquid. When it comes out from the cylinder, it becomes a gas (Change – A) then it burns (Change – B). The following statements pertain to these changes. Choose the correct one.

(i) Process – A is a chemical change.

- (ii) Process B is a chemical change.
- (iii) Both processes A and B are chemical changes.
- (iv) None of these processes is a chemical change.

Sol.

(ii) Process – B is a chemical change.

12. Anaerobic bacteria digest animal waste and produce biogas (Change – A). The biogas is then burnt as fuel (Change – B). The following statements pertain to these changes. Choose the correct one.

(i) Process – A is a chemical change.

- (ii) Process B is a chemical change
- (iii) Both processes A and B are chemical changes.

(iv) None of these processes is a chemical change.

Sol. (iii) Both processes A and B are chemical changes.

### Q13. Rust is

(a) Carbon dioxide (b) iron. (c) oxygen (d) iron oxide

Sol. Iron oxide

### Q14. Which of the following is not a physical change?



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(a) Rusting of iron (b) Melting of ice (c) Freezing of water (d) Dissolving sugar in water Sol. Rusting of iron