

## Claridge Science - 7

### CHAPTER 1: NUTRITION IN PLANT

#### Formative Assessment

- 1. Oral Questions:**
  - (a) Green leaves
  - (b) Green plants because they make their own food.
  - (c) Carbon dioxide and water are raw materials which in presence of sunlight and chlorophyll make starch by process of photosynthesis.
  - (d) Parasitic, Saprotrophs, Insectivorous plants, Symbiotic plants are heterotrophs, Animals also are heterotrophs.
- 2. Tick ( 3 ) the Correct answer:**
  - (a) (i) Green plants
  - (b) (i) Lichen
  - (c) (ii) Oxygen
  - (d) (iii) Cuscuta
- 3. Name these:**
  - (a) Heterotrophs (Parasitic)
  - (b) Saprotrophs (fungus)
  - (c) Insectivorous (venus flytrap)

#### Summative Assessment

- 1. Fill in the blanks:**
  - (a) There are two types of nutrition **autotrophic** and heterotrophic
  - (b) The green pigment present in leaves which helps in photosynthesis is **chlorophyll**.
  - (c) Oxygen is the gas which is released during photosynthesis and is used by organisms for respiration.
  - (d) Starch is produced during the process of photosynthesis, which is a carbohydrate.
  - (e) Food in plants is stored in the form of starch.
- 2. Write (T) for true and (F) false**
  - (a) (T), (b) T, (c) (T) (d) (T) and (e) (T)
- 3. Match the following:**

(a) Solar energy	(iii) Green plants
(b) Stomate	(v) Carbondioxide
(c) Mushroom	(i) Saprotroph
(d) Venus flytrap	(ii) Insectivorous plant
(e) Amarbel	(iv) Parasite
- 4. Answer the following questions:**
  - (a) The factors necessary for photosynthesis are water, carbondioxide, chlorophyll and sunlight.

- (b) Nutrition is the process of taking food and breaking it into simpler and soluble state which can be easily absorbed by living cells. Two types of nutrition are **autotrophic** and **heterotrophic**.
- (c) Glucose is synthesised by green plants during photosynthesis
- (d) Saprotrophs are organisms that grow and feed on dead plants and animals. They have no chlorophyll hence cannot perform photosynthesis. Green plants are autotrophs; have chlorophyll and so make their own food.
- (e) Heterotrophs are the plants that cannot make their own food and depends on autotrophs for nutrition.
- (f) Sundew is an insectivorous plant having sweet smell. When the insect gets stuck on the hairs, the hairs wrap around, cover it will digestive juice and kills the insect to get nutrition.
- (g) Rhizobium live inside the root cells of leguminous plants. Rhizobium can fix nitrogen from atmosphere and supply it to the plant as ammonia which is utilized by plant. In return Rhizobium gets food and shelter from the leguminous plant. This symbiotic association is highly beneficial to man.
- (h) Lichens are composite organisms consisting of symbiotic association between algae and fungus.
- (i) Photosynthesis can be represented as: Carbon dioxide + water  $\xrightarrow[\text{Chlorophyll}]{\text{Sunlight}}$  Glucose + Oxygen.
- (j) Some insectivorous plants are green and can make their food, but these grow in areas deficient in nutrients like Nitrogen and so they trap insects to obtain such nutrients.

## CHAPTER 2: NUTRITION IN ANIMALS

### Formative Assessment

1. **Oral Questions:**
  - (a) Two types of nutrition in organisms in (i) Holozoic and (ii) Parasitic.
  - (b) There are five steps in holozoic mode of nutrition (i) Ingestion, (ii) Digestion, (iii) Absorption, (iv) Assimilation and (v) Egestion.
  - (c) **Digestion** is breaking down of food physically and chemically into simple and soluble form.
  - (d) The end product of (i) carbohydrate, (ii) fat and (iii) proteins are (i) glucose, (ii) fatty acid and glycerine and (iii) amino acids respectively.
2. **Tick ( 4 ) The correct answer:**
  - (a) (ii) small intestine
  - (b) (iii) Oesophagus
  - (c) (iii) respiration
  - (d) (iv) starch
  - (e) (iv) large intestine.

**3. Name these:**

- (a) Breaking down of complex food into simple food in DIGESTION
- (b) A parasite living outside the body of the host is ECOTOPARASITE.
- (c) An animal which feeds on the dead remains of other animals is SCAVENGER.

*Summative Assessment*

**1. Fill in the blanks:**

- (a) The three glands associated with digestive system in humans are: **salivary gland, liver and pancreas.**
- (b) The alimentary canal begins at **Mouth** and ends at **Anus**
- (c) From the mouth, the food enters into **pharynx** and the swallowed into **oesophagus** (or food pipe).
- (d) The two sets of teeth that we have during our lifetime are (i) primary (or deciduous or milk teeth) and (ii) permanent teeth.
- (e) Primary teeth are **twenty (20)** number while permanent teeth are **Thirty two (32)** in number.

**(2) Write (T) for true and (F) for false:**

- (a) (T), (b) (F), (c) (F), (d) (T), (e) (T)

**(3) Match the following:**

- |                  |               |
|------------------|---------------|
| (a) sour         | (iv) tongue   |
| (b) food vacuole | (i) Amoeba    |
| (c) respiration  | (ii) energy   |
| (d) incisors     | (iii) biting  |
| (e) liner        | (v) bile      |
| (f) anylase      | (viii) enzyme |
| (g) stomach      | (vi) chyme    |

**(4) Answer the following question:**

**Ans. (a)** Living organisms need food for growth, repair and proper functioning the body. The mode of nutrition in which solid particles of food are taken is called holozoic nutrition.

Holozoic nutrition occurs in five steps:

**(i) Ingestion-** Food is taken in the body through opening.

**(ii) Digestion-** Breaking down of food into simple and soluble form by physical and chemical process.

**(iii) Absorption :** Absorption of simple food into the blood.

**(iv) Assimilation:** Utilization of simple food by the body.

**(V) Egestion:** Removal of undigested food from body.

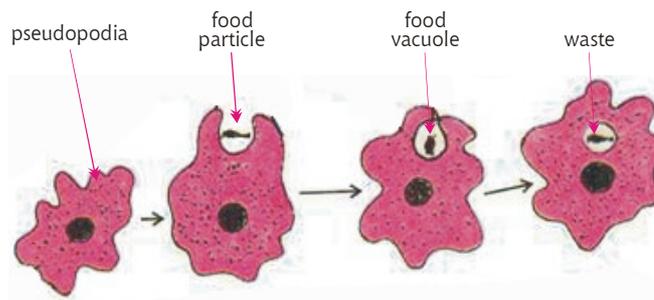
**Ans. (b)** Different types of teeth in humans and their functions are as below:

**(i) Incisors:** These are flat and blade like placed at the front. These are used for cutting and biting.

**(ii) Canines:** They are sharp and pointed teeth present on both sides of incisors. These are used for tearing.

**(iii) Molars and premolars:** These are broad and are used for crushing and grinding the food.

**Ans. (c) Phagocytosis:** In unicellular animals, the organism forms a cuplike structure around the food called food vacuole inside the cell. Enzymes are released from the food vacuole which break down the food, digest and assimilate it. This process of nutrition is known as phagocytosis.



Nutrition in Amoeba

**Ans. (d)** See Diagram on page. 16 and page 19

Figure 1- Human Digestive System (Block Diagram)

Figure 2- The Human Digestive system (Body Parts) page.- 19

**Ans. (e) Digestion in Ruminants:** These are grass eating animals. The grass contains plant fibre & cellulose which get digested slowly. The animals chew the food quickly and swallow. The food is brought back from stomach to mouth and chewed again. This process is called rumination. Now the food is swallowed again and gets digested in various chambers of huge stomach by the action of bacteria. There are four chambers in the stomach i.e. **rumen, reticulum, Omasum and abomasum**

The chewed food first goes to rumen where bacteria break down the cellulose which partially get digested. It then goes to next chamber called reticulum the food is converted to cud. This cud is brought back to mouth for further chewing. This chewed cud is swallowed again and passed on to third chamber. Most of the water from cud is absorbed and partially digested food is passed on to fourth chamber the abomasum. Here the gastric juices act on cud and digest it completely.

**Ans. (f) (i) Function of tongue:** The tongue is very important muscular organ present in mouth. It is used for moving food in different direction towards teeth. So as to make chewing easy (b) Tongue has taste buds also which help in distinguishing taste like sour, salty, sweet or bitter. (c) It helps us to speak also.

**(ii) Functions of Epiglottis:** It is a flaplike structure which prevents the food from going into windpipe.

**Ans. (g)** When the food is broken into small bits and chewed, the saliva secreted by salivary glands is simultaneously poured over it. Saliva contains an enzyme called amylase which converts starch into maltose. Thus saliva breaks down the food chemically.

**Ans. (h)** Juices secreted by liver is called BILE Juice, which helps in breaking the fats into small droplets for easy digestion.

**Ans. (i)** Amoeba is an endoparasite. It has cell structure and gets its nutrition by process of phagocytosis.

**Ans. (j)** Diarrhoea can be prevented by avoiding indigestion, food poisoning, malnutrition, bacterial infection, viral infection and parasitic infections etc. For this proper hygiene should be observed.

**Unit -2 Things and Chemical changes.**

## CHAPTER 3: FIBRE TO FABRIC

### Formative Assessment

(Answers)

#### 1. Oral Questions:

- (a) Silk is most widely used for making fashionable cloths. It is also used for making curtains, draperies, cushion covers, sofa covers, bullet proof vests, non-absorbable sutures, parachutes etc. In combination it is used to achieve new effects in other fabrics.

#### Properties of Wool:

- (b) Wool is resistant to heat, cold, fire and dirt. It insulates noise also. It regains its original shape after being stretched or creased. It can be easily dyed.

**Uses of Wool:** Mostly used for making wollen garments like sweaters etc. to keep body warm in winters. It is used to absorb odour and noise of heavy machines and also in stereo-speakers and to cover cloth diapors.

- (c) **Sheep breeding:** It is practised to improve the characteristics of sheep, so as to get desired quality of fleece from it.

#### 2. Tick the (3) Correct answer:

- (a) (iv) Silk, (b) (ii) wool, (c) (i) adult. (d) (iv) Japan (e) (iii) throwing.

#### 3. Ring the odd one:

- (a) Rayon, (b) Shirt, (c) Grading

#### 4. Name these:

- |                                      |         |
|--------------------------------------|---------|
| (a) Material made by weaving threads | Fabric  |
| (b) Converting yarn into cloth       | Weaving |
| (c) A viral disease of sheep         | Scrapie |

### Summative Assessment

**1. Fill in the blanks:**

- (a) Silk worms feed on **mulberry** leaves
- (b) High quality silk is produced by **Bombyx Mori**
- (c) **Wool** is a fibre that comes from the fleece of sheep.
- (d) Types of wool is determined by the **quality** of a sheep's fleece.
- (e) Removing fleece from a sheep's body is called **shearing**.

**2. Write (T) for true and (F) false**

- (a) F, (b) T, (c) T, (d) F, (e) T, (f) F, (g) T

**3. Match the following:**

- |                 |                             |
|-----------------|-----------------------------|
| (a) Shearing    | (iii) Removing fleece       |
| (b) Sericulture | (vi) Raising silkworms      |
| (c) Weaving     | (v) Changing yarn to fabric |
| (d) Synthetic   | (iv) Acrylic                |
| (e) scouring    | (i) cleaning wool.          |
| (f) Spinning    | (ii) changing fibre to yarn |

**(A) Answer the following question:**

- (a) By the end of old stone age say about 25000 years ago, people started weaving yarn into cloth.

The clothing materials are (i) natural and (ii) artificial. Cotton, silk , wool, fur, leather and flax are natural clothing materials. Paper, plastic and rubber are artificial clothing materials and have certain advantages over natural materials. Nylon and acrylic are synthetic fibres, also used for clothing purposes.

- (b) **Wool** is the fibre produced from outer coat of sheep. The scaling and crimping make it possible to spin the wool so that individual fibres remain attached with each other.

- (c) **Processing of wool involves** (i) Shearing, (ii) Sorting and grading (iii) Making yarn and (iv) making fabric.

**(i) Shearing:** The removal of fleece from sheep in known as shearing, which is usually carried out once a year. The fleece is removed in one piece so that sorting and grading can be done easily.

**(ii) Sorting and grading:** Putting wool in different groups according to quality is called sorting and grading. The quality of wool depends upon its fineness, strength, crimp and colour. The white colour wool is most desirable.

**(iii) Making Yarn:** The wool is scoured with detergents to remove yolk, dust and other impurities. The yolk contains grease and it is processed into Lanolin which is used as skin ointment.

Cleaned wool is passed through rollers for carding where the teeth of rollers arrange the fibre into web, then to slivers and roving. Finally it is twisted into yarn.

**(iv) Making Fabric:** Yarn is knitted or weaved into variety of fabrics which undergoes finishing process. Ultimately fabric is used to make cloth.

**(d) Properties of Wool:** See answer (b) of oral questions.

**(e) History of silk:** The silk was discovered and developed in ancient china. About 2640 B.C., a Chinese Empress Si-Ling-Chi watched glistering amber cocoons which little worms were spinning on mulberry leaves. She unwound the threads on cocoon and found that it was a very long strand of shining material. For about 2500 years the chinese kept it secret. But somehow Japanese got the secret and developed the silk and today Japan is leading producer of silk. Later on in about 550 AD Europeans also got the secret and developed silk.

**(f) Rearing of Silkworms: [Sericulture]** The highest quality of silk is produced by Bombyx Mori from mulberry leaves. The farmers treat the Bombyx Mori with great care and patience just like a new born baby. The rear it under carefully controlled temperature and protect from mosquitoes flies and insects.

**(i) Production of Caterpillar:** In early summer, a female Bombyx Mori lays about 200-500 eggs of lemon-yellow colour. The fertile eggs are kept in cold storage. In early next spring, the fertile eggs are hatched in an incubator at suitable temperature. In about 20 days these hatch into caterpillars.

**(ii) Development of Caterpillars:** The caterpillars at first eat mulberry leaves continuously. The worms grow to about 70 times of their original size and shed their skin for times and passes through different stages known as instar.

**(iii) Spinning the Cocoon:** The fully grown silkworm stops eating and is ready to spin its cocoon. The worm spins a net to hold itself to twig and forms a cocoon which actually is silk. The silkworm spin around its body until all the fluid has been used. after continuing the spin process for about three days, the larva changes into pupae which becomes a moth in about three weeks and completes its life cycle.

The moth bursts the cocoon and breaks the thread into short ones. To avoid this, most of pupae are killed by baking into hot over before they break their outer cover.

## CHAPTER 4: HEAT

### Formative Assessment

(Answers)

**1. Oral Questions :**

- (a) Mercury
- (b) Conduction, Convection and Radiation
- (c) Mercury is a good conductor of heat and it shines well that its position on scale can be seen easily.

**(2) 2. Tick ( 3) the Correct answer:**

- (a) (ii) Iron (b) (iv) Zinc, (c) (iii) kelvin (d) (iv) 373k, (e) (i) Mercury.

**(3) Name these:**

- (a) The degree of 'hotness' or 'coldness' of a body **Temperature**
- (b) A thermometer used to measure the temperature of hotter object.....Pyrometer
- (c) The mode of heat transfer that does not need a medium.....Rediation.

### Summative Assessment

**1. Fill in the blanks:**

- (a) The degee of hotness or coldness is called **Temperature**.
- (b) 273 k is equal to **0°c**
- (c) Black bodies are **good** radiators of heat.
- (d) **Convection** does not occur in solids
- (e) The normal temperature of healthy human in 37°c
- (f) Transfer of heat from a hot body to cold one without any material medium is called **Rediation**.

**(2) Write (T) for true and (F) for false:**

- (a) T, (b) T, (c) T, (d) F, (e) F.

**(3) Match the following:**

- |   |                      |
|---|----------------------|
| (a) Heat Flow                           | (iv) Cold object     |
| (b) Condensation                        | (vii) Gives out heat |
| (c) Evaporation                         | (i) Takes up heat    |
| (d) temperature on a cold winter day    | (iii) 6°c            |
| (e) Temperature of steel making furnace | (v) 1600°c           |
| (f) Temperature of a healthy person     | (ii) 37°c            |
| (g) Ice melts                           | (vi) 0°c             |

**(4) Answer the following question:**

- (a) Heat is the energy that is transferred from one body to another due to difference in temperature. Heat always flows from a body of higher temperature to body at lower temperature irrespective of the quantity of heat contained in body. Temperature is the degree of hotness or coldness of a body.

Temperature is used to measure temperature of body.

It works on the principle that substance (mercury of thermometer) expands on heating.

A Thermometer is made of glass having fine capillary tube and a small bulb in which mercury is filled. when bulb is put in contact with body, it absorbs heat and the mercury present in bulb and capillary expands according to temperature of the body. The thermometer has a graduated scale in °C or °F, The temperature is directly noted from the graduated scale.

(b) **Different scales of temperatures are:**

(i) **Celsius Scale:** The ice point is °c and steam point is 100°. The distance between these two points on the glass thermometer are divided in 100 division. It is also called as centigrade scale.

(ii) **Kelvin Scale:** It is based on fact that lowest achievable temperature is 273° below the Ice point (°c). The unit size on Kelvin Scale is same as celsius. On this scale absolute zero is -273°c. Thus Ice point is 273°k and steam point is 373°k.

(iii) **Fahrenheit Scale:** The Ice point is marked as 32°F and steam point as 212°F and this distance on thermometer is divided into 180 division.

(c) **Clinical thermometer:** There is a constriction in clinical thermometer which prevents the mercury in the stem from flowing back to bulb, after thermometer is removed from body, so that temperature recorded can be easily known.



Clinical Thermometer

To measure the temperature of patient, the thermometer is put beneath the tongue of patient and left there for about a minute. It is then taken out of mouth and temperature is noted. After this a slight jerk is given to thermometer, so that mercury prevented by constriction flows back to bulb for taking next reading.

(d) **Transfer of Heat:** Heat energy always travels from hotter body to cold one and in this process many things (changes) happen. Thus heat energy is transferred from one body to another due to temperature difference. There are three different modes of Heat transfer i.e, (i) Conduction (ii) Connection and (iii) Radiation.

In conduction, heat transfer occurs from molecule to molecule from hot and to cold end of solid. The molecules (particles) remain in their original position.

In convection heat is transferred within the mass of the body by actual movement of the molecules or particles, as in liquids.

In radiation process, heat energy flows in the form of energy waves. In this case no material media is needed. When radiation falls on an object, the energy is transferred to the body and it heats up.

(e) **Good & Bad Conductors :**

**(i) Good Conductors of Heat:**

The substances through which the heat is easily conducted or say rate of heat conduction is fast, are good conductors. Usually metals are good conductors of heat. For example silver, copper, Iron, aluminium etc.

**(ii) Bad Conductors of Heat:**

The substances which do not conduct heat easily or rate of heat transfer is slow, are called bad conductors (or insulators) of heat. Wood, Leather, asbestos and paper etc. are bad conductors of heat.

## CHAPTER 5: ACIDS, BASES & SALTS

### Formative Assessment

**1. Oral Questions:**

- (a) Hydrochloric Acid
- (b) Acid present in citrus fruits
- (c) Citric Acid
- (d) Acids are sour in taste and turn blue litmus red. Most acids are good conductors of electricity and are corrosive in nature.

**2. Tick ( 3 ) the Correct answer:**

- (a) (ii) citric acid (b) (ii) Nitric Acid, (c) (i) Washing soda (d) (iii) Benzoic Acid, (e) (i) citric acid.

**3. Name these:**

- (a) Substances which are sour in taste and turn blue litmus paper red.....Acids.
- (b) The reaction of an acid with base to form salt and water.....Neutralization.
- (c) Solutions which give different colours with acidic or basic medium..... Universal indicator.

### Summative Assessment

**1. Fill in the blanks:**

- (a) Acids turn blue litmus red
- (b) Bases soluble in water are called **Alkalies**
- (c) Curd contains **Lactic Acid**
- (d) **Sodium** hydroxide is used in refining edible oils.
- (e) Wasp stings are **alkaline**

**2. Write (T) for True and (F) for false**

- (a) T, (b) T, (c) T, (d) F, (e) T.

**3. Match the following:**

- |                       |                         |
|-----------------------|-------------------------|
| (a) Sodium Carbonate  | (ii) Petroleum Refining |
| (b) Calcium Hydroxide | (iv) White washing      |
| (c) Citric Acid       | (v) Lemon Juice         |
| (d) Acetic Acid       | (vi) Food Preservation  |
| (e) Oxalic Acid       | (iii) Tomato juice      |
| (f) PH scale          | (i) Universal Indicator |

**4. Answer the following questions:**

- (a) A substance which when dissolved in water, gives hydronium ion as the only positively charged ion, is called an acid.

**Classification of Acids**

(i) On the **basis of source** as (i) Organic and (ii) Mineral acids.

Organic acids are derived from plants and animals whereas mineral acids are derived from minerals.

(ii) On the **basis of strength** as (i) Strong acids and (ii) weak acids.

(iii) On the basis of **Concentration** as (i) Concentrated and (ii) Diluted acids.

- (b) Important applications (Uses) of hydrochloric, sulphuric and nitric acids.

**(i) Hydrochloric Acid:** It is used in (i) liquid cleaners for wash basin, floor tiles and metal surfaces, (ii) for Making glue and starch and (iii) for bleaching purposes in textile industry.

**(ii) Sulphuric Acid:** Used in the manufacture of fertilizers, drugs, dyes, detergents, paints and explosives, synthetic fiber, textile, paper and leather industry, petroleum refining and storage lead batteries for automobiles.

**(iii) Nitric Acid :** Used for purification of gold and silver, manufacture of some dyes, perfumes, medicines, artificial silk, explosives, plastics etc.

- (c) Bases are the substances which react with acids to form salt and water only. Generally bases are formed when metals react with oxygen, e.g. calcium oxide is formed when calcium burns in oxygen. Similarly metals like Sodium, Potassium, Magnesium yield oxides which are bases. Ammonia forms hydroxide and also is a base.

**Properties of Bases:**

These are bitter in taste and turn red litmus paper blue. They have soapy touch and turn methyl orange to yellow and phenolphthalein pink. Usually their solution in water is good conductor of electricity. Some bases like NaOH and KOH have corrosive action on skin.

- (d) A neutral substance formed due to reaction between acid and base is called as salt. It does not bring any change in colour of an indicator. The neutral salts are also formed when metals react with acids. The reaction between an acid and a base to form salt and water only, is called neutralization.

### Some Important Salts

(1) Sodium chloride	NaCl
(2) Sodium carbonate	$\text{Na}_2\text{CO}_3$
(3) Sodium bicarbonate	$\text{NaHCO}_3$
(4) Potassium Nitrate	$\text{KNO}_3$
(5) Magnesium Sulphate	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$
(6) Copper Sulphate	$\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
(7) Potash Alum	$\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$
(8) Sodium sulphate	$\text{Na}_2\text{SO}_4$

**5. Name each of the following:**

- (a) Two indicators (i) Methyl orange (ii) phenolphthalein
- (b) Acid Present in Human Stomach Hydrochloric Acid
- (c) Acid used to make soft drinks Citric Acid
- (d) Acid found in tamarind tartaric Acid
- (e) Acid present in citrus fruits Citric Acid

## CHAPTER 6: MORE ABOUT CHEMICAL CHANGES

### Formative Assessment

**1. Oral Questions:**

- (a) Chemical changes result in formation of new substance having different characteristics as compared to original substances and are usually accompanied with either or all the following changes: (i) change of energy, (ii) change of state, (iii) change of colour, (iv) Evolution of gas and (v) Formation of precipitate.

The chemical reactions can be classified as: (i) Displacement reactions, (ii) Decomposition reaction, (iii) Double decomposition reactions, (iv) Combination reactions (v) Neutralization reactions.

- (b) Crystals are the purest form of a substance (compounds of elements)
- (c) Two elements are: Oxygen and Carbon.

**2. Tick (✓) the Correct answer:**

- (a) (ii)  $\text{Na}_2\text{SO}_4$ , (b) (iv) saline, (c) (iv) carbon, (d) (iii) Nitrogen

**(3) Name these:**

- (a) A change in which no new substance is formed.....physical change
- (b) The conversion of iron into iron oxide when exposed to moist air is called...Rusting (chemical change)
- (c) The process of forming crystals of a substance .... crystallization.

### Summative Assessment

**1. Fill in the blanks:**

- (a) The most common compound on the earth is **WATER**
- (b) The **symbol** represents one atom of an element.