CHAPTER 1 – NUTRITION IN PLANTS

Question 1-Why do organisms take food?

ANSWER- All organisms require food to get energy, to grow their body, to maintain good health and for their life processes.

Question 2. Distinguish between a parasite and a saprophyte.

ANSWER:

Saprophytes	Parasites	'CI
Acquire nutrients from dead and decaying matter	Parasites live on or in a host and get its food at the expense of its host	
Example: Fungi	Example: roundworm	

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

ANSWER: The presence of starch in leaves can be tested by iodine test. When we remove chlorophyll from leaf by boiling in alcohol and then put 2 drops of iodine solution on leaf, then blue-black color of leaf indicates presence of starch in leaf.

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

ANSWER: Green plants synthesis their food from water and carbon dioxide gas in the presence of Sun light and green pigment chlorophyll in leaves. This process is called photosynthesis.

Carbon dioxide + Water <u>Chlorophyll</u> Carbohydrate + Oxygen (glucose)

5. Show with the help of a sketch that plants are the ultimate source of food. ANSWER:



6.	Fill	in	the	blanks:
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(a) Green plants are called <u>autotrophs</u> since they synthesis their own food.

(b) The food synthesised by plants is stored as **Starch**.

(c) In photosynthesis solar energy is absorbed by the pigment called <u>chlorophyll</u>.

(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 yellow, slender and branched stem.

ii) A plant that is partially autotrophic.

iii) The pores through which leaves exchange gases.

ANSWERS:

i) Cuscuta

ii) Pitcher plant

iii) Stomata

8. Tick the correct answer:

(a) Cuscuta is an example of:

(i) autotroph

منت parasite

(iii) saprotroph

(iv) host

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

(i) Cuscuta

(ii) china rose

viii pitcher plant

(iv) rose

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

Column- I	Column-II
Chlorophyll	Rhizobium
Nitrogen	Heterotrophs
Cuscuta	Pitcher plant
Animals	Leaf

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Insects	Parasite	
ANSWERS:		
Column- I	Column-II	
Chlorophyll	Leaf	
Nitrogen	Rhizobium	
Cuscuta	Parasite	
Animals	Heterotrophs	
Insects	Pitcher plant	

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

(i) Carbon dioxide is released during photosynthesis. (F)

(ii) Plants which synthesis their food are called saprotrophs. (F)

(iii) The product of photosynthesis is not a protein. (T)

(iv) Solar energy is converted into chemical energy during photosynthesis. (T)

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 🐨 Stomata (iii) Leaf veins (iv) Petals

12. Choose the correct option from the following:

Plants take carbon dioxide from the atmosphere mainly through their:

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

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CHAPTER 2 - NUTRITION IN ANIMALS

Question1. Fill in the blanks:

- (a) The main steps of nutrition in humans are <u>ingestion</u>, <u>digestion</u>, <u>absorption</u>, <u>assimilation</u> and <u>egestion</u>.
- (b) The largest gland in the human body is liver .
- (c) The stomach releases hydrochloric acid and **digestive** 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. (F)
- (b) The tongue helps in mixing food with saliva. (T)
- (c) The gall bladder temporarily stores bile.

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

(T)

3. Tick (✓) 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

(b) Water from the undigested food is absorbed mainly in the

(i) stomach (ii) foodpipe (iii) small intestine (iv) 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	Fatty acids and glycerol
Proteins	Sugar
Fats	Amino acids

ANSWERS	
Column I	Column II
Food components	Product(s) of digestion
Carbohydrates	Sugar

Proteins Amino acids

Fats Fatty acids and glycerol

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

ANSWER- The inner wall of the small intestine has many finger-like outgrowths called villi. 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? **ANSWER-** The bile juice is produced by the liver. It plays an important role in the digestion of fats.

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

ANSWER- The name of the carbohydrate is cellulose. It is digested by ruminants but not by humans because enzymes which digest cellulose are not present in humans.

8. Why do we get instant energy from glucose?

ANSWER- Glucose is the simplest form of carbohydrates and easily gets absorbed by the blood and hence provides instant energy.

9. Which part of the digestive canal is involved in

- (i) Absorption of food <u>small intestine</u>.
- (ii) Chewing of food <u>buccal cavity</u>
- (iii) Killing of bacteria _____stomach____
- (iv) Complete digestion of food <u>small intestine</u>.
- (v) Formation of faeces <u>large intestine</u>.

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

ANSWER- Similarity: Human and amoeba both need digestive juices for the digestion of food.

Difference: Humans need to chew the food on the other hand amoeba does not need to chew the food.

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

Column I	Column II
(a) Salivary gland	(i) Bile juice secretion
(b) Stomach	(ii) Storage of undigested food
(c) Liver	(iii) Saliva secretion
(d) Rectum	(iv) Acid release
(e) Small intestine	(v) Digestion is completed
(f) Large intestine	(vi) Absorption of water
	(vii) Release of faeces
(c) Liver (d) Rectum (e) Small intestine (f) Large intestine	 (iii) Saliva secretion (iv) Acid release (v) Digestion is completed (vi) Absorption of water (vii) Release of faeces

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ANSWERS- Column I (a) Salivary gland	Column II (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
12. Label Fig. 2.11 o	f the digestive system



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

ANSWER- No, Because we need a balance diet to live long and healthy life. Also, the grass contains cellulose which can be digested by the human body.

CHAPTER 10 - RESPIRATION IN ORGANISMS

Question1. Why does an athlete breathe faster and deeper than usual after finishing the race?

ANSWER- An athlete consumes a lot of energy during running which is produced by oxidation of glucose. By breathing deeper and faster, the athlete is basically consuming more and more oxygen to meet his or her energy requirements.

Question 2. List the similarities and differences between aerobic and anaerobic respiration. ANSWER-<u>Similarity</u> - In both aerobic and anaerobic respiration, the food is broken down to release energy.

Differences

Aerobic respiration	Anaerobic respiration
i. It is the process of breakdown of food in the presence of	i. It is the process of breakdown of food in
oxygen.	the absence of oxygen.
ii. Its end products are CO_2 and H_2O .	ii. End products of anaerobic respiration can
	be lactic acid (muscles) or CO ₂ and alcohol.
iii. It takes longer time to release energy.	iii. It is a fast process as compared to aerobic
	respiration.
iv. It produces large amount of energy.	iv. It produces less amount of energy as
	compared to aerobic respiration.
Examples: It occurs in most plants and animals.	Examples: Yeast, bacteria, human muscle
	cells, etc. respire anaerobically.

Question 3. Why do we often sneeze when we inhale a lot of dust-laden air? ANSWER- By sneezing, our body tries to expel the dust particles from the air we inhaled so that only clean air enters our body

Question 4. Take three test-tubes. Fill ³/₄th of each with water. Label them A, B and C. Keep a snail in test-tube A, a water plant in test-tube B and in C, keep snail and plant both. Which test-tube would have the highest concentration of CO₂?

ANSWER- The concentration of CO_2 will be highest in test-tube A because snail takes oxygen and breathes out carbon dioxide. Whereas, plants take CO_2 and produce oxygen.

Question 5. Tick the correct answer: (a) In cockroaches, air enters the body through (i) lungs (ii) gills (iii) spiracles (✓) (iv) skin

(b) During heavy exercise, we get cramps in the legs due to the accu

mulation of

- (i) carbon dioxide (ii) lactic acid (\checkmark)
- (iii) alcohol (iv) water

(c) Normal range of breathing rate per minute in an average adult

person at rest is:

- (i) 9–12
- (iii) 21–24
- (iv) 30–33

(ii) 15–18 (✓)

(d) During exhalation, the ribs

- (ii) move downwards (i) move outwards
- (iii) move upwards (iv) do not move at all

Question 6. Match the items in Column I with those in Column II:

Column I Column II (a) Yeast (i) Earthworm **→(ii)** Gills (b) Diaphragm-(c) Skin -(iii) Alcohol (d) Leaves (iv) Chest cavity (e) Fish-→(v) Stomata (vi) Lungs and skin (f) Frog

(vii) Tracheae

Question 7. Mark 'T' if the statement is true and 'F' if it is false:

(i) During heavy exercise the breathing rate of a person slows

down. **(F)**

(ii) Plants carry out photosynthesis only during the day and

respiration only at night. (F)

(iii) Frogs breathe through their skins as well as their lungs. (T)

(iv) The fishes have lungs for respiration. (F)

(v) The size of the chest cavity increases during inhalation. (T)

Question 8. Given below is a square of letters in which are hidden different words related to Respiration in organisms. These words may be present in any direction — upwards, downwards, or along the diagonals. Find the words for your respiratory system. Clues about those words are given below the square.

s	v	M	Р	L	U	N	G	s
С	Z	G	g	W	X	N	Т	L
R	М	Α	Т	I	D	0	Т	С
Ι	Y	R	Х	Y	М	S	R	Α
В	R	Η	Ι	Α	N	Т	Α	Y
s	Т	Р	Т	В	Z	R	С	E
М	I	Α	М	Т	s	I	H	Α
s	Р	Ι	R	Α	С	L	E	S
N	E	D	K	J	N	s	A	Т

(i) The air tubes of insects- Trachea

- (ii) Skeletal structures surrounding chest cavity- Ribs
- (iii) Muscular floor of chest cavity- Diaphragm
- (iv) Tiny pores on the surface of leaf- Stomata
- (v) Small openings on the sides of the body of an insect- Spiracles
- (vi) The respiratory organs of human beings- Lungs
- (vii) The openings through which we inhale- Nostrils
- (viii) An anaerobic organism- Yeast
- (ix) An organism with tracheal system- Ant

S	v	M	Р	L	U	N	G	S
С	Z	G	Q	w	X	N	Т	L
R	Μ	A	Т	I	D	0	T	C
I	Y	R	X	Y	M	S	R	Α
в	R	н	1	A	N	Т	A	Y
S	Т	Р	T	В	Z	R	С	E
М	Ι	A	M	Т	S	I	н	A
S	Р	I	R	A	С	L	E	S
N	Е	D	К	J	Ν	S	A	Т

Question 9. The mountaineers carry oxygen with them because:

(a) At an altitude of more than 5 km there is no air.

(b) The amount of air available to a person is less than that available on the ground. (\checkmark)

(c) The temperature of air is higher than that on the ground.

(d) The pressure of air is higher than that on the ground.

CHAPTER 11 - TRANSPORTATION IN ANIMALS AND PLANTS

Question1. Match structures given in Column I with functions given in Column II.

plants-

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Question 2. Fill in the blanks.

(i) The blood from the heart is transported to all parts of the body by the arteries

(ii) Haemoglobin is present in <u>red blood</u> cells.

(iii) Arteries and veins are joined by a network of **capillaries.**

(iv) The rhythmic expansion and contraction of the heart is called <u>heart beat.</u>

(v) The main excretory product in human beings is **urea**

(vi) Sweat contains water and salts.

(vii) Kidneys eliminate the waste materials in the liquid form called <u>urine</u>.

(viii) Water reaches great heights in the trees because of suction pull caused by transpiration.

Question 3. Choose the correct options:

(a)	In	plants,	water	is	transported	through

(i) Xylem (✔)	(ii) Phloem
(iii) Stomata	(iv) Root hair
(b) Water absorption through ro	ots can be increased by keeping the
(i) in the shade	(ii) in dim light

(iii) under the fan (✓)(iv) covered with a polythene bag

Question 4. Why is transport of materials necessary in a plant or in an animal? Explain.

ANSWERS- Every cell in the body of plants and animals need a regular supply of oxygen and nutrients for various activities. Also, the removal of waste products such as CO_2 is important, which can be only possible through the transport of materials.

Question 5. What will happen if there are no platelets in the blood?

ANSWER-The blood clots due to the presence of platelets. If there are no platelets in the blood, then after a minute injury or cut, the blood will not clot and continue to flow outside the body and the person might die.

Question 6. What are stomata? Give two functions of stomata.

ANSWER-Stomata are tiny pores present on the surface of a leaf.

Functions of stomata:

- (a) Stomata help in the exchange of gases.
- (b) Transpiration of water from the leaf surface occurs through stomata

Question 7. Does transpiration serve any useful function in the plants? Explain.

ANSWER-Transpiration is the evaporation of water from the plants. The water evaporates through the stomata present on the surface of the leaves. It's useful functions are-

- i). It helps in lowering the temperature of plant thus prevents heat injury to the plant.
- ii). Due to transpirational pull water rises in higher plants.

Question 8. What are the components of blood?

ANSWER- The main components of blood are plasma, red blood cells, white blood cells, and platelets.

Question 9. Why is blood needed by all the parts of a body?

ANSWER- The blood that circulates in the body distributes food and oxygen to different cells of the body. It also carries waste products from different parts of the body for excretion.

Question 10. What makes the blood look red?

ANSWER- The presence of haemoglobin makes blood appear red.

Question11. Describe the function of the heart.

ANSWER- The rhythmic beating of the various chambers of the heart maintains the circulation of blood and transport of substances to the different parts of the body, providing oxygen & nutrients to the cells or tissues and removing carbon dioxide and other wastes.

Question12. Why is it necessary to excrete waste products?

ANSWER- Because waste products produced in our body via various metabolic activities are harmful to our body.

Question13. Draw a diagram of the human excretory system and label the various parts. Answer-



CHAPTER 12 - REPRODUCTION IN PLANTS

Question 1. Fill in the blanks:

(a) Production of new individuals from the vegetative part of parent is called <u>vegetative</u>

propagation

(b) A flower may have either male or female reproductive parts. Such a flower is called

<u>Unisexual.</u>

(c) The transfer of pollen grains from the anther to the stigma of the same or of another flower of the same kind is known as <u>pollination</u>.

(d) The fusion of male and female gametes is termed as **fertilisation**

(e) Seed dispersal takes place by means of <u>wind, water</u>, and <u>animals</u>.

Question 2. Describe the different methods of asexual reproduction. Give examples. ANSWER-Different methods of asexual reproduction are:

Vegetative propagation: It is a type of asexual reproduction in which new plants are produced from roots, stems, leaves and buds.

Budding: In this process, a new individual from a bulb-like projection, bud, grows and gets detached from the parent to form a new individual and it is mostly observed in yeast.

Spore formation: Spores are asexual reproductive bodies. A spore is covered by a hard protective coat to withstand unfavourable conditions such as high temperature & humidity. So they can survive for a long time. Under favourable conditions, a spore germinates and develops into a new individual. Fungi on bread and plants such as moss and ferns reproduce through spores.

Fragmentation: In this process, a new organism is developed from the fragments of the parent body. Example, An Spirogyra breaks up into two or more fragments. These fragments or pieces grow into new individuals

Question 3. Explain what you understand by sexual reproduction.

Answer- It is the mode of reproduction in which male & female gamete fuse together to form a zygote. The zygote gradually divides to form a new organism.

Question 4. State the main difference between asexual and sexual reproduction.

ANSWERS-

Asexual reproduction	Sexual reproduction
i. It requires only one parent.	i. It requires two parents.
ii. In asexual reproduction, newly developed plants	ii In sexual reproduction, newly developed plants
are identical to the parent and to each other.	are similar to their parents.
iii. Special reproductive parts are not required for	iii. Flower is the reproductive part of a plant
asexual reproduction.	which contains the sexual organs of a plant.
	These
	are important for sexual reproduction.
Examples are yeast, rose, jasmine, potato, etc.	Examples are flowering plants, such as Hibiscus,
	corn, papaya, etc.

Question 5. Sketch the reproductive parts of a flower.

ANSWER-









Question 6. Explain the difference between self-pollination and cross-pollination. ANSWER-

Self-pollination	Cross-pollination
i. It involves the transfer of pollen from	i. It involves the transfer of pollen from the stamen of one
the stamen to the pistil of the same	flower to the pistil of another flower of the same plant or that
flower.	of a different plant of the same kind.
ii. It occurs only in bisexual flowers.	ii. It occurs in both unisexual and bisexual flowers.

Question 7. How does the process of fertilisation take place in flowers?

ANSWER-After pollination, pollen grain develops a pollen tube which passes through style to the ovule. Pollen tube carries male gametes to the ovule. Through micropyle it enters in the ovule where one male gamete fuses with female gamete to form zygote. This process of fusion of male and female gamete is called fertilization.

Question 8. Describe the various ways by which seeds are dispersed.

ANSWER- Seed dispersal occurs by the following agencies:

(a)**Dispersal by animals** - For example, birds and animals can eat the fruits and excrete the seeds away from the parent plant. Some seeds have barbs or other structures that get attached to the animal's body and are carried to new sites.

(b)**Dispersal by wind** - Seeds that get dispersed by wind are usually smaller in size or they have wings or hair-like structures. For example, winged seeds of drumsticks, hairy fruit of sunflower, etc. are dispersed by wind.

(c)**Dispersal by water -** Many aquatic plants or plants that live near water has seeds that can float and are carried away by water. For example, coconuts can float and are dispersed by water.

(d) **Dispersal by explosion** - Sometimes the seeds are dispersed by the bursting of fruits with sudden jerks. The seeds get scattered or distributed far from the parent plant. Examples of such plants are castor and balsam.

