

Science
Fourth Primary
Second Term

Unit ONE

Lesson ONE

HUMAN DIGESTIVE SYSTEM

I - Give reason for each of the following :

1 – All body systems are working in full harmony?

To keep the human alive

2 – Digestion process is very important?

Because it is the process of changing (breaking down) food from a **complex form** into **simple substances** to let the body benefit from them

3 – Food must be digested into simple substances?

To let the body benefit from it

4 – Teeth are formed from incisors, canines and molars?

To cut, tear and grind food

5 – Molars make food swallowing easy?

Because they grind food

6 – Salivary glands secrete saliva inside the mouth cavity?

- To make food swallowing easy
- To digest (change) **starch** into **sugar**

7 – Starch is not digested in the stomach?

Because it is digested and changed into sugar **by saliva** that is secreted in the mouth

8 – Bile juice is very important?

Because it helps in the **digestion of fats** as it changes **fat** into **fatty emulsion**

9 – Liver helps in the digestion of fats?

Because it secretes **bile juice** that helps in the **digestion of fats** as it changes **fat** into **fatty emulsion**

10 – Fats are digested in the small intestine (duodenum)?

Because **liver** secretes **bile juice** in the duodenum, where it helps in the **digestion of fats** as it changes **fat** into **fatty emulsion**

11 – You cannot live without small intestine?

Because it is responsible for:

- **Completing** the digestion of different types of food
- **Absorption** of the digested food

12 – The stomach cannot digest food completely?

Because pancreatic juice, bile juice and intestinal juice that complete the digestion of different types of food are poured in small intestine not in the stomach

13 – Absorption of food doesn't takes place in the stomach?

Because completing the digestion of different types of food doesn't take place in the stomach but takes place in small intestine (Ileum)

14 – Proteins are digested in stomach and small intestine?

Because stomach secretes gastric juice that make incomplete digestions of proteins, while the complete digestion of proteins occurs in small intestine

15 – You must not eat fast meals?

Because it contains a large amount of fats

16 – Don't buy food from street sellers?

To avoid infectious diseases

17 – You must chew the food well?

Avoid having food that contains flavour additives?

You should practice sport regularly?

To keep the digestive system healthy

2 – What happens when :

1 – Tongue is not found in the mouth?

- Food can't be mixed well with saliva
- We can't move food inside the mouth cavity
- We can't taste food

2 – Salivary glands stop secreting saliva?

- Food swallowing will be difficult
- Starch will not be digested into sugar

3 – Stomach doesn't secrete gastric juice?

Proteins will not be changed into semi-liquid substances

4 – Liver stops secreting bile juice?

Fats will not be changed into fatty emulsion

5 – Adding the bile juice of a chicken to a mixture of cooking oil and water, then shaking them?

Oil and water are mixed together forming emulsion

6 – The small intestine is removed from the human body?

Food can't be completely digested and also can't be absorbed so the man can't get benefit from food

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Lesson TWO

HUMAN RESPIRATORY SYSTEM

I - Give reason for each of the following :

1 – The respiration process is very important process?

Because it is the process by which the human obtains energy from burning the digested food

2 – Breathing through nose is preferable than through mouth?

Because nose is lined with:

- Hair and mucus layer to **filter the air** from dust and microbes before entering the lungs
- Blood capillaries to **warm the air** before entering the lungs

3 – Nose is lined with hairs and mucus layers?

To **filter the air** from dust and microbes before entering the lungs

4 – Nose is lined with blood capillaries (tiny blood vessels)?

To **warm the air** before entering the lungs

5 – Food doesn't enter the respiratory system "trachea" during swallowing?

Due to the presence of **epiglottis** that closes the trachea during swallowing

6 – The trachea has incomplete cartilaginous rings?

To be permanently opened for breathing *OR* to be opened all the time for breathing

7 – The trachea is lined with cilia?

To eject up the strange objects as dust

8 – The number of respiration times increases during running?

To obtain more energy

9 – The number of inhalation and exhalation times increases during running?

To obtain more energy

10 – The volume of the chest cavity increases during the inhalation process?

Because the diaphragm **contracts and moves down** and the ribs **moves upwards**, so the volume of the chest cavity increases

11 - The volume of the chest cavity decreases during the exhalation process?

Because the diaphragm **relaxes and moves up** and the ribs **moves downwards**, so the volume of the chest cavity decreases

12 - The exhaled air differs from the inhaled air?

Because the **exhaled air** rich in **carbon dioxide gas** and **water vapour**, while the **inhaled air** rich in **oxygen gas**

13 - The exhaled air turns clear limewater into turbid?

Because it contains carbon dioxide gas

14 - Alveoli and blood capillaries have thin walls?

To allow the exchange of gases

15 - Alveoli are surrounded by a network of blood capillaries?

Because the exchange of gases occurs between the **air in alveoli** and the **blood in blood capillaries**

16 - It is preferred to human to skip being in crowded places?

You should keep off the severe cold

To keep the respiratory system healthy

17 - Eating orange and guava is very important?

To provide us with vitamin (c) that is necessary that protect us from cold

18 - Avoid smoking or being a passive smoker?

Because smoking leads to **cancer** causing **death and** to keep the respiratory system healthy

2 - What happens when :

1 - There are no hairs and mucus layer in the nose?

Dust and microbes will enter the lungs

2 – There are no blood capillaries in the nose?

The air will not be warmed before entering the lungs

3 – The epiglottis is removed from larynx of the human respiratory system?

Some food particles or water will enter the trachea during swallowing

4 – There are no cartilaginous rings in the wall of the trachea?

We can't breathe all the day

5 – There are no cilia in the trachea?

Strange objects as dust will enter the respiratory system

6 – The diaphragm muscle contracts "moves down"?

The chest cavity **enlarges** and the air rich in **oxygen** will enter the two lungs through the nose

7 – The diaphragm muscle relaxes "moves Up"?

The chest cavity **becomes narrow** and the air rich **carbon dioxide gas** and **water vapour** will leave the two lungs through the nose

8 – You blow in a test tube containing clear limewater?

The clear limewater turns into turbid (milky)

9 – You exhale several times in front of mirror?

Water droplets are formed on the mirror due to the **condensation** of **water vapour**

10 – There are no blood capillaries around the alveoli?

The exchange of gases **will not** occur

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Lesson THREE

**THE CELL – THE BUILDING UNIT OF
A LIVING ORGANISM**

I - Give reason for each of the following :

1 – The digestive system is considered as a system?

Because it consists of a group of organs

2 – The shoot system is considered as a system?

Because it consists of a group of organs

3 – The kidney is considered as an organ?

Because it consists of a group of tissues

4 – The root is considered as an organ?

Because it consists of a group of tissues

5 – The cell wall is very important structure for the plant cell?

Because it supports the plant cell and gives it a definite shape

6 – The plant cell has a definite shape?

Due to the presence of **cell wall**

7 – The cell membrane is a very important component in the cell?

Because it controls the substances that enter or leave the cell

8 – The nucleus of the cell is very important component in the cell?

Because

- It **organizes** all the biological operations in the cell
- It is responsible for **cell division**

9 – Plant cell contains chloroplasts (Green plastids)?

Because they are responsible for making food by photosynthesis process

10 – Plants can make their own food?

Due to the presence of chloroplasts (green plastids) that are responsible for making food by photosynthesis process

11 – Animal cell has indefinite shape?

Due to the absence of cell wall

12 – Animals can't make their own food?

Due to the absence of chloroplasts (green plastids)

13 – The unicellular organism is an integrated living organism?

Because it has the ability to do all the biological functions such as respiration, nutrition,....etc.

14 – Yeast fungus has an economic importance?

Because it used in making bread and alcohol

15 – Yeast fungus is used in making bread?

Because during making the bread, yeast produces **carbon dioxide gas** that causes the **swelling of bread** making it **porous** and **light**

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Lesson FOUR

**THE IMPORTANCE OF SUNLIGHT
TO LIVING ORGANISMS**

I - Give reason for each of the following :

1 - Green plants are called producers?

Because they can make their own food by photosynthesis process

2 - Green plants can make their own food?

Due to the presence of chloroplasts that are responsible for making food by photosynthesis process

3 - There are chloroplasts in the cells of producers?

To absorb sunlight that is necessary for photosynthesis process

4 - Plants need sunlight, water, carbon dioxide and mineral salts?

To make their own food by photosynthesis process

5 - The potted plants inside houses should be directed to sunlight?

The green plant leaves become yellow and weak if they aren't exposed to sunlight?

Because sunlight (**light energy**) are necessary for plants to make their own food by photosynthesis process

6 - During testing the presence of starch, we put the green leaf in ethyl alcohol?

To get rid of its green colour (chloroplasts)

7 - Iodine solution is used to detect the presence of starch in the plant leaves?

Because its colour changes into **blue** in the presence of starch

8 - We immerse the Elodea plant in water containing sodium bicarbonate?

To obtain carbon dioxide gas that is needed for the photosynthesis process

9 - The glowing of splint increases when you put it close to the top of a test tube containing oxygen gas?

Because oxygen helps in burning

10 – Consumers can't make their own food?

Due to the absence of chloroplasts

11 – Cows and chickens are considered as consumers?

Because they don't make their own food, but they depend on **producers** in feeding

12 – Lions and tigers are considered consumers?

Because they don't make their own food, but they feed on **consumers** that fed on **producers** before

13 – Human is considered as consumer?

Because he doesn't make his own food, but he feeds on **producers** *OR* feeds on **consumers** that fed on **producers** before

14 – Decomposers can't make their own food?

Due to the absence of chloroplasts

15 – Bread mold fungus is considered as a decomposer?

Because it gets its food by decomposing the bread

16 – Food spoils if it is left outside the refrigerator for a long period of time?

Because food is exposed to decomposers as bacteria and fungi that decompose food causing its spoil

17 – Decomposers have a great economical and environmental importance?

Decomposers are very important?

Because

- They help use to get rid of bodies of dead organisms and plant remains
- They increase the soil fertility
- They are used in a lot of industries

2 – What happens when :

1 – Plant leaves have no chloroplasts?

They can't make their own food, because chloroplasts are responsible for making food by photosynthesis process

2 – Plants are not exposed to sunlight for few days?

The green leaves become yellow and weak, because sunlight (light energy) is necessary for plants to make their own food by photosynthesis process

3 – You put a lighted splint close to the mouth of a test tube full of oxygen?

The glowing of the splint increases, because oxygen helps in burning

4 – Plants disappear from the environment?

All living organisms will die, because plant is the main source of **food** and **energy** for all other living organisms

5 – The absence of decomposers from nature?

- The bodies of dead organisms will remain in nature causing diseases
- The fertility of the soil decreases

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Lesson ONE

FORMS OF ENERGY AND THEIR CHANGES

I - Give reason for each of the following :

1 – You hear a sound when you tap a tuning fork?

Because sound is produced (originated) from the **vibration** of objects

2 – To move the children's toys, you must fill the spring first?

On filling the spring of a toy car then let it free, the car moves?

Because the **stored potential energy** changes into **kinetic energy** that moves the car

3 – You feel warm when you rub your hands together?

On hammering on a piece of iron, it becomes hot?

On removing a nail from a wooden plate, the nail becomes warm?

Because **Kinetic energy** changes into **heat energy**

4 – The dynamo in the motorbike must touch the wheel?

To change the **kinetic energy of the wheel** into **electric energy**

5 – When you ride a bicycle, some changes of energy happen?

Because the kinetic energy of the wheel changes into electric energy **by the dynamo** and the electric energy changes into light energy **by the lamp**

6 – The lighting of the car lamp increases by increasing the speed of the car?

Due to producing **more** electric energy by the dynamo that changes into **light energy** in the lamp

7 – The electric fan rotates during the passing of the electric current?

Because the electric energy changes into kinetic energy in the **fan's motor**

8 – The solar cell is useful? Because

- It changes light energy into electric energy that is used in houses
- It provides satellites with electric energy to operate their pieces of equipment

9 – Satellites are provided with solar cells?

Because the solar cells provide satellite with electric energy to operate their equipment

2 – What happens when :

1 – A piece of fixed rubber band is pulled, then it is left?

A sound is produced due to the vibration of the piece of rubber band

2 – You remove a nail from a wooden plate and why?

The nail becomes hot, because the kinetic energy changes into heat energy

3 – You switch on the electric lamp?

The lamp lights, because the electric energy changes into light energy

4 – You switch on the electric fan?

The fan rotates, because the electric energy changes into kinetic energy

5 – Sun rays fall on a lens that is put over a piece of paper?

The paper will be heated up and **may burn** if it is exposed to the sun rays for a long period of time

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Lesson TWO

SOURCES OF ENERGY

I - Give reason for each of the following :

1 – The Sun (solar energy) is very important to plants?

Because it helps the plants to make their own food by **photosynthesis process**

2 – The Sun (solar energy) is very important for human's life?

Because it provides us with **heat** to warm our bodies, **light** for vision and **food** for growth

3 – The Sun (solar energy) is responsible for the formation of clouds?

Because it causes the **evaporation** of **water** in seas, lakes and oceans forming **water vapour** that **condenses** forming **clouds**

4 – The Sun (solar energy) is very important for the means of transport?

Because some means of transport as cars are operated by **benzene** which is extracted from **petroleum oil** which is formed by the effect of **the Sun**

5 – Solar cells are used to generate electricity?

Because they change solar energy into electric energy

6 – Windmills are used to generate electricity?

Because they change wind energy into electric energy

7 – Solar heater is used to warm homes and heat water?

Because it change solar energy into heat energy

8 – Wind energy, rising and ebb tides energy and waterfalls energy are renewable resources of energy?

Because the continually renew themselves

9 – Coal, petroleum and natural gas are non-renewable resources of energy?

Because the don't renew themselves and may be exhausted by the continuous use

10 – It is preferred to use natural gas than coal?

The government gives attention to use natural gas instead of gasoline?

Because it the cleanest form of **fuel** and it causes less pollution for the environment

11 – The Sun is the main source of energy on Earth? Because

- It helps the plant to make its own food by photosynthesis process
- It provides us with heat to warm our bodies
- It provides us with light for vision
- It provides us with electricity by solar cells and windmills

2 – What happens when :

1 – The absence of Sun from Earth?

We will lose the main source of energy on the Earth, where:

- Plants, animals and humans will not feed, so they will die
- A lot of industries and machines will stop due to the absence of electricity and fuel

2 – The plant in not exposed to the Sun?

Its green leaves become yellow and weak, because sunlight is necessary for plants to make their own food by photosynthesis process

3 – The dead animals and plants were buried under the Earth's surface millions of years ago?

The fuel such as petroleum oil, coal and natural gas will be formed

4 – We depend on the non-renewable resources of energy only?

They will be exhausted

5 - Petroleum oil is exhausted (run out) from Earth?

Absence of benzene and natural gas for several days?

Many machines and many means of transports can't be operated

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Lesson THREE

THE ELECTRICITY

I - Give reason for each of the following :

1 – The balloon becomes charged after rubbing?

Because rubbing of objects generates **electric charges** on the object

2 – The attraction of rubbed balloon to a wall?

Due to the formation of **electric charges** on the balloon causing the attraction to the wall

3 – The ruler becomes charged after rubbing?

Because rubbing of objects generates **electric charges** on the object

4 – Attraction of small bits of paper to a ruler rubbed by your hairs?

Due to the formation of **electric charges** on the ruler causing the attraction of the small bits of paper

5 – Sometimes your hair stands when you comb it by a plastic comb?

Due to the formation of **electric charges** on the plastic comb causing the attraction of your hair, so your hair stands

6 – Hearing a sound when you put off your clothes?

Because during motion, your body parts are rubbed by the clothes forming electric charges on the body and clothes

7 – Battery is a main part in the electric circuit?

The importance of the battery in the electric circuit?

The electric circuit must contain a battery?

Because it is the source of **electric current** in the electric circuit

8 – The presence of electric switch (key) in the electric circuit?

To open and close the electric circuit

9 – Don't use the electric current of home when you perform an activity?

Because the electric current of homes has **high power that** may cause death

10 – The electricity is very important in our life?

Because it is a clean form of energy and it is used to operate many home equipment such as television, washing machine and vacuum cleaner

2 – What happens when :

1 – Rubbing a plastic ruler with a piece of wool?

Some electric charges are formed on it

2 – Getting the charged balloon close to a wall?

The charged balloon will be attracted to the wall

3 – Getting a ruler rubbed by a piece of wool close to small bits of paper?

The rubbed ruler will attract the small bits of paper

4 – Rubbing an inflated balloon by wool, then getting it close to your hair?

The inflated balloon **becomes charged** and will attract my hair

5 – Rubbing your hair with a comb?

Your hair will stand and be attracted to the comb

6 – Removing a battery from a closed electric circuit?

The lamp will not light

7 – The switch is absent from the electric circuit?

We can't close and open the electric circuit

8 – You put a copper and a zinc plate in a lemon, then touch it by your tongue?

You will feel a **weak electric current** in your tongue

9 – Cutting off the electric current of your home for one day?

The electricity is not present at homes?

We can't operate many electric equipment as television, washing machine and computer

THANK YOU