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SCIENCE

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The pH



Revision Book
& Model Answers

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Primary
First Term
By Ahmed Omara

PONY

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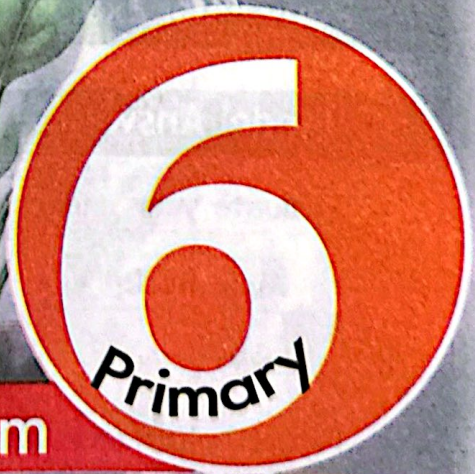
SCIENCE

Revision Book

Prepared by:

Ahmed Omara
Ahmed Gamal

First Term



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Final Revision on Chapters

Definitions

Give an example

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Revision on Chapter 1

Conditions for Burning

1 Definitions:

Atmospheric Air	It is a mixture of different gases, including nitrogen, oxygen, carbon dioxide and other gases.
Global Warming	It is a problem caused by emission of too much carbon dioxide gas from burning things.

2 Functions:

Gaps in up and bottom of closed jar	It allows air circulation (movement), so fresh air can be replaced.
Oxygen gas	It supports combustion (burning).
Limewater	It is used to check the presence of carbon dioxide gas. (Its colour turns from clear colourless into milky white when it reacts with carbon dioxide.)
Safety goggles	It protect our eyes during experiments.
Gas Detector Tube	A glass tube containing a chemical that reacts with a specific gas and changes color. The gas amount is measured by reading the number at the border of the color change.
Gas Monitor	A device that uses a sensor to detect gases and shows the percentage (%) of the gas on a screen in digital numbers.
Bellows	A tool for blowing air used by craftspeople in ancient Egypt to pump air into a fire to supply more oxygen.
Benban Solar Park	A giant solar power plant in Aswan that generates electricity to bring light to Egyptian homes without producing any carbon dioxide.

3 Important numbers:

78%	It is the percentage of nitrogen gas in the air.
21%	It is the percentage of oxygen gas in the air.
0.04%	It is the percentage of carbon dioxide gas in the air.

4

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4 Give an example for:

Gases found in the atmospheric air	• Nitrogen gas • Carbon dioxide gas • Oxygen gas
Tools used to check or measure gases	• Gas Detector Tube • Gas Monitor
Liquid used to detect carbon dioxide	• Colourless and clear limewater
Fuels burned by Ancient Egyptians for light	• Animal fat • Plant oil
Tool used to pump air into a fire	• A bellow
Fuels that cause global warming	• Oil • Coal
Renewable energy resources	• The sun • Wind
A giant renewable energy project in Egypt	• Benban Solar Park

5 Comparisons:

1. State of a Candle Flame Based on Air flow:

P.O.C	Jar Covered with a Lid (No Gaps)	Jar with a Gap at the Bottom Only	Jar with Gaps at Top and Bottom
Figure			
Air Movement	Fresh air stops coming in.	Air enters from the bottom gap but has trouble leaving.	Fresh air constantly flows in and out freely.
State of Flame	The flame goes out after a short time.	The flame keeps burning, but it is unstable .	The flame keeps burning, and it is stable .
Reason	The air inside the jar is used up (consumed).	The air inside is not properly replaced.	Fresh air is constantly supplied from the surroundings.

2. Properties of Gases in the Air:

P.O.C	Oxygen Gas	Nitrogen Gas	Carbon Dioxide Gas
Percentage in Air	About 21%	About 78%	About 0.04%
Power to Help Things Burn	It supports combustion.	It doesn't support combustion.	It prevents burning.
Effect on Lit Incense Stick	The stick burns brightly.	The flame goes out immediately.	The flame goes out immediately.
Change During Burning	Its amount decreases. (It is used up).		Its amount increases (It is produced).

3. Tools Used to Check Gases:

P.O.C	Gas Detector Tube	Gas Monitor
Detection Method	It uses a chemical inside that reacts with a specific gas.	It uses a sensor to detect the gas.
How to Read the Result	Read the number on the scale at the border where the colour is changed.	Look at the percentage (%) on the screen in digital numbers.

4. Energy Sources in Egypt (Past vs. Modern):

P.O.C	Ancient Egyptian Lighting	Modern Egyptian Lighting
Resources Used	Animal fat and plant oil	The sun and the wind

6 Give a reason for:

1. Things to keep burning, gaps are needed at the top and bottom of a jar.

Because fresh air must constantly flow in and out the jar to keep burning.

2. A candle flame goes out quickly when covered completely with a lid.

Because the fresh air is not replaced, and the air inside the jar is used up (consumed).

3. A burning candle flame is unstable if there is only a gap at the bottom of the jar.
Because air enters from the bottom gap, but it is not replaced.

4. The amount of oxygen decreases while the amount of carbon dioxide increases after a candle burns.

Because during burning, a part of the oxygen in the air is used, while carbon dioxide is newly produced.

5. Clear and colorless limewater turns milky white after a candle burns inside a closed jar.

Because burning produces carbon dioxide, and limewater turns milky white when it reacts with carbon dioxide gas.

6. You must wear safety goggles when experimenting with limewater.

To protect your eyes so the limewater doesn't get in them.

7. Ancient craftspeople pumped air into their fires using bellows.

To supply more oxygen, which makes the fire burn intensely enough to melt gold at high temperatures to make beautiful jewelry.

8. Egypt built the Benban Solar Park.

To protect the Earth by generating electricity using solar energy without producing any carbon dioxide, which helps reduce global warming.

7 What happens if:

1. You put a lit incense stick into a jar filled with pure oxygen gas?

The incense stick burns brightly because oxygen has the power to help things burn.

2. You put a lit incense stick into a jar filled with nitrogen or carbon dioxide?

The flame goes out immediately because both two gases do not support combustion.

3. Carbon dioxide gas mixes with clear limewater?

The colourless and clear limewater turns milky white.

4. You break the ends off a gas detector tube, insert it into a pump, and pull the handle fully?

Air is pulled into the tube, and the chemical inside reacts with the gas and changes colour.

5. There is plenty of oxygen supplied to a fire using bellows?

The fire burns intensely and reaches high temperatures hot enough to melt gold.

1 Definitions:

Breathing (Respiration)	It is the process of taking in oxygen gas into the body and letting out carbon dioxide gas in the air.
Inhalation (Breathing in)	It is the process of taking in oxygen gas into the body.
Exhalation (Breathing out)	It is the process of letting out carbon dioxide gas in the air.
Inhaled Air (Breathed-in air)	It is the air we take into our bodies through the nose or mouth.
Exhaled Air (Breathed-out air)	It is the air we release from our bodies through the nose or mouth.

2 Functions:

Limewater in breathing experiment	It is used to detect the presence of carbon dioxide gas in the exhaled air.
Gas detector tubes in breathing experiment	It is used to find the percentage of oxygen and carbon dioxide gas in inhaled and exhaled air.
Windpipe (Trachea)	A special tube in the body that allows air to travel from the nose and mouth to the lungs.
Lungs	The organs inside our chest where the exchange of oxygen and carbon dioxide takes place.
Alveoli	Tiny air sacs inside the lungs surrounded by blood vessels that responsible for gas exchange.
Gills	The specific organs that fish use to breathe in oxygen gas and out carbon dioxide gas.
Heart	It pumps oxygen-rich blood to the whole body.

3 Give an example for:

Animals that breathe using lungs	Cats and humans
Animals that breathe using gills	Fish
Tools used in the breathing experiment	Plastic bags (polyethylene bags), limewater, safety goggles, gas detector tubes, gas sampling pump, and scissors

4 Comparisons:

1. Room Air vs. Exhaled Air:

P.O.C	Room Air (Inhaled Air)	Exhaled Air (Breathed-out Air)
Detection Method	About 21%	Very low percentage (But still present).
Carbon dioxide	About 0.04%	High percentage of carbon dioxide.

2. Chest Movement During Breathing:

P.O.C	During Inhalation (Breathing In)	During Exhalation (Breathing Out)
Air Path	Air goes in through the nose and mouth, down the windpipe, then to the lungs.	Air goes from the lungs, up the windpipe, and out the nose and mouth.
Chest Size	It gets bigger.	It gets smaller.

3. Testing Air with Limewater:

P.O.C	Testing inhaled (room) air	Testing exhaled air
Colour Change	The colour doesn't change (It remains clear).	Limewater turns milky white.

4. Breathing in Animals:

P.O.C	Cats (and Humans)	Fish
Breathing Organ	Two lungs	Gills

5. Gas Exchange in the Alveoli:

P.O.C	Oxygen Gas	Carbon Dioxide Gas
Direction of Movement	Taken into the blood from the air.	Let out of the blood into the air.

5 Give a reason for:

1. **The colour of clear limewater turns milky white in a plastic bag filled with exhaled air.**

Because exhaled air contains a high percentage of carbon dioxide gas, which reacts with limewater, and changes its colour into milky white.

2. **The colour of clear limewater remains clear in a plastic bag filled with room air.**

Because room air contains a very low percentage of carbon dioxide (about 0.04%).

3. **The chest gets bigger when a person inhales (breathes in).**

Because the inhaled air travels down the windpipe and fills the left and right lungs inside the chest.

4. **The body needs the heart to work alongside the lungs during respiration.**

To pump that oxygen-rich blood to the whole body.

5. **The oxygen taken in by the lungs is able to travel all the way to your fingertips and toes.**

Because the oxygen is carried by the blood and pumped to the whole body by the work of the heart.

6 What happens if:

1. You breathe in (inhale) air through your nose or mouth?

The air travels down the windpipe to reach the left and right lungs, and your chest gets bigger.

2. You breathe out (exhale) air?

Your chest gets smaller, and air rich in carbon dioxide gas travels up the windpipe and leaves from your nose and mouth.

3. You blow exhaled air into a plastic bag containing clear limewater and shake it?

The clear limewater will turn milky white because of the carbon dioxide in your breath.

4. Blood passes through the blood vessels around the alveoli in the lungs?

Gas exchange takes place: oxygen from the air is taken into the blood, and carbon dioxide from the blood is let out into the air.

5. A fish breathes?

It breathes in and out using its gills, and lets out carbon dioxide into the water.

Revision on Chapter 3

Digestion

1 Definitions:

Digestion	It is the process of breaking down food into small pieces and changing it into a simpler form that the body can easily absorb.
Digestive tract	It is the path that food travels through the body, starting from the mouth to the anus.

2 Functions:

Digestive juice	A special liquid inside the body that helps in digesting food.
Saliva	A digestive juice in the mouth that breaks down starch found in food into simpler form.
Villi	They are small bumps on the inside of the small intestine that make its inner surface area larger so it can absorb nutrients efficiently.
Small intestine	It absorbs nutrients from digested food.
Large intestine	It absorbs water from undigested food.
Liver	• It converts some nutrients into a form that is easy for the body to use. • It produces a digestive juice that helps break down and absorb fat. • It stores some of the nutrients as energy and sends them to the whole body when needed. • It breaks down harmful substances produced in the body so they can be eliminated in urine.

3 Give an example for:

Digestive juice	Saliva
Material used to make a dilute starch solution	Cooked rice
Organs that make up the digestive tract	Mouth, food pipe, stomach, small intestine, large intestine.
Organs that produce digestive juices	Mouth, stomach, intestines
Harmful wastes eliminated by the body	Urine, feces (stool)

4 Comparisons:

1. Starch and Iodine Experiment:

P.O.C	Starch mixed with Water	Starch mixed with Saliva
When adding iodine solution	The colour changes into blue-purple.	The colour does NOT change.
Reason for the result	Water does not break down the starch.	Saliva breaks the starch down into something else.

2. Small Intestine vs. Large Intestine:

P.O.C	Small Intestine	Large Intestine
Main function	It absorbs nutrients from the digested food.	It absorbs water from the undigested food.

3. Flat Cloth and Towel:

P.O.C	Flat Cloth	Towel
Surface Shape	It is completely flat.	It has many small bumps or loops.
Ability to Absorb	It does not absorb liquids very well.	It absorbs liquids much better.

4. Digestive Juices:

P.O.C	Small Intestine	Large Intestine
Main function	It absorbs nutrients from the digested food.	It absorbs water from the undigested food.

5 Give a reason for:

1. Teeth have important role in the mouth.

Because they break down the food into small pieces.

2. Saliva has important role in the digestion process.

Because it breaks down starch found in food into simpler form.

3. During the experiment of saliva, the test tubes are placed in a beaker of hot water (about 40 °C).

To make the same temperature of the environment as inside the human body.

4. The inner surface area of the small intestine needs to be larger.

To absorb nutrients more efficiently.

5. The small intestine has small bumps called villi instead of a flat wall.

To make the inner surface area larger, just like the loops on a towel to absorb nutrients more efficiently.

6. The liver breaks down harmful substances produced in the body.

To be removed from the body in the form of urine.

7. Undigested food must pass through the large intestine.

To absorb more water from undigested food before stool (feces) is eliminated from the body.

6 What happens if:

1. Food enters the mouth?

It is broken down into small pieces by the teeth and then mixed with saliva.

2. Dilute iodine solution is added to warmed mixture of starch and water?

The colour changes to blue-purple.

2. Dilute iodine solution is added to warmed mixture of starch and saliva?

The colour does not change because the saliva has broken down the starch.

4. Nutrients are absorbed in the small intestine?

They are carried to the whole body by the blood, but first, they must pass through the liver.

5. Nutrients reach the liver?

The liver converts some nutrients into an easy-to-use form, stores them as energy, and sends them out to the whole body when needed.

6. Undigested food leaves the small intestine?

It passes into the large intestine, where more water is absorbed from it.

7. The leftover waste passes through the large intestine?

What is left is eliminated out of the body from the anus as feces (stool).

Revision on Chapter 4

Circulation and Excretion

1 Definitions:

Blood Circulation	It is the continuous flow of blood through blood vessels that spread all over the body.
Heartbeat	It is the movement of the heart when it is pumping out blood.
Pulse	It is the feeling of the heartbeat as it travels through the blood vessels.
Urine	It is the liquid waste containing extra water and waste products that is produced by the kidneys.
Blood Vessels	It is a network of tubes that connect all organs and allow blood to move throughout the whole body.

2 Functions:

Heart	It works without resting to pump blood throughout the body.
Blood	• It carries oxygen gas and nutrients to the whole body. • It collects carbon dioxide and waste and returns them to the heart.
Kidneys	They filter the blood from waste products and unnecessary things.
Bladder	It temporarily stores urine until it is discharged out of the body.
Ribs	It protects organs in the chest such as heart and lungs.
Gills	It was used by ancient Egyptians to protect liver when they made mummies.
Imsety canopic jar	It pumps oxygen-rich blood to the whole body.
Hapi canopic jar	It was used by ancient Egyptians to protect stomach when they made mummies.
Duamutef canopic jar	It was used by ancient Egyptians to protect lungs when they made mummies.
Qebehsenuef canopic jar	It was used by ancient Egyptians to protect lungs when they made mummies.
Molokhia	It is full of nutrients that help keep our blood flowing smoothly and help us digest our food.

3 Give an example for:

Organs located in the chest	Right and left lungs and the heart
Organs located in the abdomen	Stomach, small intestine, large intestine, and liver
Places on the body to feel your pulse	Kidneys
Important organs kept safe in Canopic jars by Ancient Egyptians	Wrist, neck, and ankle
Shapes of heads on ancient Egyptian Canopic jars	Human (Imsety), Jackal (Wild dog), Baboon, and Falcon
Unnecessary things collected by the blood to be let out	Carbon dioxide, waste products, and extra water
Traditional Egyptian food that helps keep organs healthy	Molokhia

4 Comparisons:

1. Types of Blood in Scientific Diagrams:

P.O.C	Red Colored Blood Vessels	Blue Colored Blood Vessels
What they carry	Blood rich in oxygen gas and nutrients.	Blood rich in carbon dioxide and waste products.

2. Heartbeats During Resting and After Exercising:

P.O.C	While Resting (Sitting)	After Exercising (Jumping)
Speed of Pulse	Normal	Faster (increases / greater)

3. Locations of the Organs:

P.O.C	Organs in the Chest	Organs in the Abdomen	Organs in the Lower Back
Organs Found Here	Left lung, right lung, and the heart (sandwiched between them)	Stomach, long small intestine, large intestine, and liver	Kidneys (one on each side)
Protection	Protected by the ribs.	Packed closely together without gaps.	Located on the back side of the body.

4. Ancient Egyptian Canopic Jars:

P.O.C	Human Head Jar (Imsety)	Jackal Head Jar (Wild Dog)	Baboon Head Jar	Falcon Head Jar
Protected Organ	Liver	Stomach	Lungs	Intestines

5 Give a reason for:

1. Your heartbeat or pulse increases after you exercise.

To send more oxygen and nutrients through the blood to the whole body.

2. The blood returning from the whole body must be sent to the lungs.

To let out collected carbon dioxide gas and to take in fresh oxygen from the air we inhale.

3. Ancient Egyptians left the heart inside the mummy's body instead of putting it in a jar.

Because they believed the heart was the "Place of Wisdom" where the mind or soul lived.

4. Eating the traditional Egyptian food "Molokhia" is good for your health.

Because Molokhia is full of nutrients that help digest food, keep our blood flowing smoothly, and keep our body's organs healthy.

5. Ancient Egyptians put organs like the lungs and stomach in special Canopic jars.

To keep them safe, because they believed that these organs were important "engines" that supported human life.

6 What happens:

1. When waste products and extra water are carried by the blood to the kidneys?

The kidneys filter them out from the blood to become a liquid waste called urine.

2. To urine after it is produced by the kidneys?

It is temporarily stored in a balloon-like sac called the bladder until it is discharged out of the body.

3. To oxygen taken in by the lungs and the nutrients absorbed by the small intestine?

They enter the blood and are carried to cells all over the body using the pumping power of the heart.

4. When you put two fingers near the base of your thumb on your wrist?

You can feel your pulse, which is the movement of your heartbeat traveling through your blood vessels.

Revision on Chapter 5

Photosynthesis

1 Definitions:

Photosynthesis	It is the process where plants use sunlight to make their own food.
Plant respiration (breathing)	It is a process happening during day and night where a plant takes in oxygen and releases carbon dioxide to get energy.
Starch	It is the food or nutrient produced by leaves during photosynthesis when sunlight hits them.

2 Functions:

Iodine solution	It is used to check the presence of starch in plant leaves. A yellowish-brown liquid used to check for starch. It turns blue-black if starch is present.
------------------------	--

3 Give an example for:

Vital processes plants perform	Photosynthesis - Respiration - Transpiration
A nutrient produced by plant leaves	Starch
A highly flammable liquid used in plant experiments	Ethanol
A solution used to detect the presence of food in leaves	Dilute iodine solution
Items used to block sunlight from a leaf	Aluminum foil

4 Comparisons:

1. Photosynthesis and Respiration:

P.O.C	Photosynthesis	Respiration (Breathing)
Time of occurrence	Only in the daytime	Occurs in both day and night
Purpose of the process	Production of starch	Releasing energy
Gas taken in (consumed)	Carbon dioxide	Oxygen
Gas released (produced)	Oxygen	Carbon dioxide

2. Leaf Exposed to Sun vs. Leaf Covered with Aluminum Foil:

P.O.C	Leaf Exposed to Sunlight	Leaf Covered with aluminum Foil
Condition before the test	Received sunlight for 5 hours.	Did not receive sunlight.
Presence of starch	Starch is present.	No starch is present.
Colour after adding iodine	Turns blue-black.	Remains yellowish-brown.

3. Gas Exchange in Day vs. Night:

P.O.C	Daytime	Nighttime
What the plant is doing	Photosynthesis is very active (breathing also happens).	Only breathing happens because there is no light.
Overall gas taken in	Carbon dioxide	Oxygen
Overall gas released	Oxygen	Carbon dioxide

5 Give a reason for:

1. None of a healthy plant's leaves are overlapping.

Because they all want to reach the sunlight.

2. Ethanol should not be heated directly over a flame.

Because ethanol is highly flammable and could start a dangerous fire.

3. The leaf is put in hot water at the beginning of the starch test.

To make the leaf soft.

4. The leaf is placed in warmed ethanol during the starch test.

To remove the green colour from the plant leaf.

5. Leaves covered with aluminum foil remain yellowish-brown when tested with iodine.

Because they did not receive sunlight, meaning no starch was formed.

6. A plant takes in more carbon dioxide during the daytime even though it is also breathing.

Because there is sunlight, making the photosynthesis process very active.

7. Plants only take in oxygen and release carbon dioxide during the nighttime.

Because there is no light, so the plant only breathes.

6 What happens:

1. When sunlight hits the leaves of plants?

The plant produces starch, which is the food it needs to grow healthy.

2. When you add dilute iodine solution to a leaf that contains starch?

The color changes from yellowish-brown to blue-black.

3. When you touch the hot water directly during the starch experiment?

You will get burned.

4. To the green color of a leaf when it is put into warmed ethanol?

The green colour is removed from the leaf.

5. To the air inside a sealed transparent bag covering a plant after it sits in the sunlight for one hour?

The amount of oxygen gas increases and the amount of carbon dioxide decreases.

6. To the inside of the sealed bag covering the plant after some time?

Water droplets appear due to the transpiration process.

Revision on Chapter 6

Transportation of Water in Plants

1 Definitions:

Transpiration	It is the process where water inside the plant changes into water vapor and is released into the air from the leaves.
Stomata	They are tiny pores mostly found on the underside of leaves that act as exits for water vapor to leave the plant.
The path of water in plant	They are the connected tubes inside the roots, stems, and leaves that allow water to travel and spread to the whole body of the plant.
Starch	It is the nutrient that plants produce efficiently by using sunlight.
Papyrus	It is a specific tall plant that grows near water in Egypt, famously used in ancient times to make paper.

2 Functions:

Roots	The part of the plant that absorbs water from the soil to help the plant make its own food.
Stem	The plant part that transports (carries) water from the roots up to the leaves.
Leaves	The part of the plant that produce starch (plant food).
Stomata	It gets rid of excess water inside the plant in the form of water vapour.

3 Give an example for:

A plant with large, flat leaves to catch sunlight	Lotus (water lily)
A tall plant used in ancient times to make paper	Papyrus
A nutrient produced by plants	Starch
A gas that plants take in from the air through photosynthesis process.	Carbon dioxide
A gas that plants release into the air through photosynthesis process.	Oxygen
A gas that plants release into the air through transpiration process.	Water vapour
A scientific tool used to observe the tiny water paths inside a plant	Magnifying glass or microscope

4 Comparisons:

1. The Transpiration Experiment (Plastic Bag Test):

P.O.C	Plant with leaves	Plant without leaves
What is observed inside the plastic bag?	Water droplets are formed inside the plastic bag.	No water droplets form inside the plastic bag.

2. The function of Plant Parts in relation with water:

P.O.C	Roots	Stem	Leaves
Main Function for Water	They absorb water from the soil.	They carry the water from the roots to the leaves.	They use the water to make food and release extra water into the air.

3. Plant Effects on the Environment:

P.O.C	Natural Air Purifier effect	Natural Sprinkler effect
The Process	Photosynthesis	Transpiration
What does the plant release?	Oxygen	Water vapour
How does it help environment?	It keeps the air clean for us to breathe.	It lowers the temperature to make the air feel cooler especially in desert areas.

4. Amazing Plant Adaptations:

P.O.C	Natural Air Purifier effect	Natural Sprinkler effect
Shape	Large and flat leaves floating on the Nile River.	Grows many meters tall with straight tubes inside the stem.
Purpose	It acts like a "solar panel" to catch strong sunlight and produces starch efficiently.	It carries water absorbed by the roots all the way to the top at once.

5 Give a reason for:

1. Water is essential for plants.

Because water helps plants make their own food through photosynthesis.

2. A wilted plant recovers after a while when you water its base.

Because water spreads to the whole body of the plant traveling through connected paths in the roots, stems, and leaves.

3. You must wash the plant's roots with water before putting them in the colored water flask.

To remove any soil from the roots before starting the experiment.

4. Scientists use red coloured water in the plant flask experiment.

To make the path of water visible and see exactly where the water passes inside the plant.

5. Water droplets form inside the plastic bag covering a leafy plant on a sunny day.

Because the plant gets rid of excess water in the form of water vapour through the leaves through transpiration, and this water vapour gets trapped inside the bag.

6. Getting close to green plants in the desert country of Egypt feels remarkably cool.

Because plants act like a "natural sprinkler", as they release water vapour which lowers the temperature around the plant through transpiration.

7. Green plants along the Nile River act as a "natural air purifier".

Because during photosynthesis, they take in the carbon dioxide that humans breathe out and release fresh oxygen, keeping the air clean.

8. Water absorbed by the roots of the papyrus plant can reach all the way to the top at once.

Because inside the papyrus stem, there are strong, straight water paths that carry the water straight up at once.

6

What happens:

1. When you put a plant in a flask contains red-coloured water and then cut its stem a few hours later?

Specific parts of the cut surface will turn red. These red spots show the exact paths the colored water traveled through.

2. When you place a plastic bag over a plant without leaves on a sunny day?

No water droplets will form inside the bag because transpiration cannot happen without leaves.

3. If all the tiny pores (stomata) on a plant's leaves are completely blocked?

The plant will not be able to release water vapour in the air.

4. When a plant releases water vapor from its leaves into the surrounding desert air?

The temperature around the plant is lowered, making the air cooler.

5. When green plants perform photosynthesis?

They take in carbon dioxide and release oxygen, which acts to clean the air.

Revision on Chapter 7

Food Chain

1 Definitions:

Food Chain	It is the "eat and be eaten" connection (feeding relationship) between living organisms in an ecosystem.
Producers (Plants)	• They are living organisms that use sunlight to produce nutrients inside their bodies. • They are the beginning of the food chain.
Herbivores	They are the animals that eat plants.
Carnivores	They are the animals that eat other animals.
Omnivore	It is a living organism, that has the ability to eat both plants and animals.
Transpiration	It is the process where plants release water absorbed from their roots into the air as water vapor.
Photosynthesis	It is the process where plants use sunlight and carbon dioxide to produce their own food (starch).

2 Give an example for:

Producers (Plants)	Grass, algae, wheat, trees, leaves, dandelion
Herbivores	Grasshoppers, rabbits, caterpillars, giraffes
Carnivores	Snakes, eagles, lions, frogs, owls, foxes, weasels
Omnivores	Human

3 Comparisons:

1. Classification of Living Organisms by Food Type:

P.O.C	Producers (Plants)	Herbivores	Carnivores	Omnivores
How they get energy	They use sunlight to produce nutrients inside their bodies.	They eat plants.	They eat other animals.	They eat both plants and animals.
Examples	Grass, algae, wheat, trees	Grasshoppers, rabbits, caterpillars	Snakes, eagles, lions, frogs, owls	Humans

2. Connection Through Air:

P.O.C	Plants (Producers)	Animals
What they release into the air	Oxygen gas	Carbon dioxide gas
What they take in from the air	Carbon dioxide gas	Oxygen gas

3. Connection Through Water:

P.O.C	Transpiration	Rain
Direction of water movement	Water moves up from the plant's roots and into the air as water vapor.	Water falls down from the clouds back to the ground.

4 Give a reason for:

1. Living organisms need to get food.

Because living organisms must get energy from food in order to grow and survive.

2. Plants placed at the beginning of the food chain.

Because they use sunlight to produce their own nutrients.

3. Humans are considered omnivores.

Because humans have the ability to eat both plants and animals.

4. We draw arrows (→) in a food chain diagram.

Because the arrows represents the direction that energy from living organism to another.

5. Water on Earth is used repeatedly by many living organisms over time.

Because water is constantly changing its shape and circulating around the Earth.



5 What happens:

1. If living organisms consume food?

They get the energy they need to grow and survive.

2. If frogs completely disappear from the food chain:

(Grass → Grasshopper → Frog → Snake)?

The number of grasshoppers will increase, and the number of snakes will decrease.

3. If plants completely disappear from the ecosystem?

The amount of oxygen gas will decrease, and the amount of carbon dioxide gas will increase.

4. If the transpiration process stops completely in an ecosystem?

The amount of water vapor in the atmosphere will decrease, which leads to less rain falling back to the ground.

5. To water on Earth over time as it interacts with the environment?

It changes its shape and circulates, allowing it to fall back to the ground as rain and be used repeatedly by animals and plants.

Revision on Chapter 8

Food Chains in Egypt

1 Definitions:

Food pyramid	It is the diagram of a food chain. It shows how energy moves between living things.
Plants (Producers)	• They are organisms that produce their own food using sunlight. • They always support the base (bottom) of the food pyramid.
Fossils	The remains of ancient living organisms that are preserved in rocks.
Wadi al-Hitan	Also known as the "Valley of the Whales." It is a desert in Egypt today, but it is filled with fossils from when it used to be an ancient ocean tens of millions of years ago.

2 Give an example for:

Types of Environments in Egypt	• Aquatic environments (the Nile River) • Arid environments (Deserts)
Producers (Plants) in the Nile River	• Algae - Water plants - Papyrus
Producers (Plants) in the Desert	• Desert shrubs – Grass - Shrub seeds
Herbivores in the Nile River	• Small shrimp - Nile tilapia fish
Herbivores in the Desert	• Grasshoppers- Jerboas
Carnivores in the Nile River	• Nile perch - Nile crocodile - Water birds - Humans
Carnivores in the Desert	• Fennec foxes - Desert Horned Vipers • Egyptian vultures - Frogs
King of the Environment (Top Carnivore)	• The Nile crocodile (King of the Nile River) • The Egyptian vulture and Fennec fox (Kings of the desert)
Places containing Fossils	• Wadi al-Hitan (Valley of the Whales)

3 Comparisons:

Food Chain in the Nile River vs. Food Chain in the Desert:

P.O.C	Nile River Food Chain	Desert Food Chain
Environment Type	Aquatic environment (water)	Arid environment (dry desert)
Producers	Algae and water plants	Desert shrubs and grass (or shrub seeds)
Herbivores	Herbivorous fish (like the Nile tilapia)	Grasshoppers and jerboas
Carnivores	Nile crocodile	Fennec foxes and Egyptian vultures
King of the Environment	Nile crocodile	Egyptian vulture
Important Similarity	Starts with plants, ends with large carnivores	

4 Give a reason for:

1. The bottom of the food pyramid is always supported by plants.

Because plants are producers that can make their own food using sunlight.

2. Scientists know the desert of Wadi al-Hitan used to be an ancient ocean.

Because the desert is now filled with the fossils of ancient marine organisms preserved in rocks.

4. The fennec fox is considered essential to the desert environment.

Because without consumers like the fennec fox, the balance of the desert ecosystem would be completely disrupted.

5. Sunlight is so important for the food pyramid.

Because sunlight provides the energy that plants (producers) need to make their own food.

1. If all the plants (producers) in the desert die out?

The herbivores would have no food. So, the carnivores would also lose their food source and die, which cause disrupting the whole food chain.

2. To the Nile tilapia if all the small shrimp disappear from the Nile River?

The Nile tilapia would lose its main food source, because they eat the small shrimps.

3. To the bottom of the food pyramid when there is no sunlight available?

Plants (producers) would not be able to make their own food.

4. When scientists study the fossils found in Wadi al-Hitan?

They can see fossils of marine organisms that tell us it was an ancient ocean that had a complete food chain.

Revision on Chapter 9

Properties of Solutions

1 Definitions:

Solution	It is a mixture formed when we put a substance in water, stir it, and it disappears or hides inside the water.
Acidic Solution	It is a solution that turns blue litmus paper into red.
Neutral Solution	It is a solution that does not change the color of either red or blue litmus paper.
Alkaline Solution	It is a solution that turns red litmus paper into blue.
Evaporating	Heating a solution until the water turns into vapor to find out what was hidden or dissolved inside it.
Natron	It is a strongly alkaline white powder found in desert salt lakes.

2 Functions:

Natron	Ancient Egyptians used it in creating mummies that kept their shape for thousands of years.
Litmus Paper	It is used to determine if a solution is acidic, neutral, or alkaline.
Glass rod	It is used to add one drop of the solution you want to test onto both litmus strips.
Pipette	It is used to transfer the solution from the test tube to the evaporating dish.

3 Give an example for:

Acidic Solutions	Lemon juice, vinegar, carbonated water (sparkling water), dilute hydrochloric acid
Neutral Solutions	Salt water, sugar water, distilled water
Alkaline Solutions	Soapy water, limewater, baking soda solution, dilute ammonia solution
Solutions with Dissolved Solids	Salt water, baking soda solution
Solutions with Dissolved Gases	Carbonated water (sparkling water), dilute hydrochloric acid, dilute ammonia solution
Home acidic Solution	Lemon juice
Home alkaline Solution	Soapy water

Natural Alkaline Powder	Natron
Laboratory Tools for Evaporation (Heating) Experiments	Portable gas stove, evaporating dish, wire gauze, pipette
Laboratory Tools for Litmus Paper Experiments	Litmus paper strips (red and blue), glass rod, beaker

4 Comparisons:

1. Types of Solutions Based on Litmus Paper Test:

P.O.C	Acidic Solutions	Neutral Solutions	Alkaline Solutions
Effect on Blue Litmus Paper	Turns red	No change	No change
Effect on Red Litmus Paper	No change	No change	Turns blue
Examples	Carbonated water, Dilute hydrochloric acid, Lemon juice, Vinegar	Salt water, Sugar solution, Distilled water	Baking soda solution, Dilute ammonia solution, Soapy water, Limewater

2. What Is Left After Heating a Solution:

P.O.C	Solutions with Dissolved Solids	Solutions with Dissolved Gases
What happens after water evaporates?	A white solid is left at the bottom of the dish.	No solid is left. Nothing remains because the gas escapes into the air.
Examples	Salt water, Baking soda solution	Carbonated water, Dilute hydrochloric acid, Dilute ammonia solution

3. Everyday Uses of Acids and Alkalis:

P.O.C	Lemon Juice	Soapy Water
Type of Solution	Acidic	Alkaline
Daily Life Use	Used for cooking	Used for cleaning

5 Give a reason for:

- 1. Ancient Egyptians use a powder called natron when making mummies.**
Because natron is strongly alkaline and has a powerful ability to absorb water from the body. This helped the mummies keep their shape for thousands of years.
- 2. Absolutely nothing left in the dish after heating carbonated water or dilute ammonia solution.**
Because when the solution is heated, the gas escapes into the air, leaving nothing behind.
- 3. Farmers in Egypt check if their soil is acidic or alkaline.**
They check the soil so they can adjust it to be perfect for plants like cotton and wheat.
- 4. Scientists carefully monitor the wastewater coming from factories.**
To make sure the water going into the Nile River is not strongly acidic or alkaline to protect the environment so fish and birds can live safely.
- 5. You must use your hand to waft the smell of a heated chemical toward you.**
To stay safe. You should never bring your face close to the dish to smell it or breathe it in directly.
- 6. You must turn off the heat while there is still a little liquid left in the evaporating dish.**
To let the remaining heat to dry the rest of the liquid safely.
- 7. You need to rinse the glass rod with water and wipe it off every time you test a new solution.**
To ensure you don't mix the liquids while doing the litmus paper test.

6 What happens:

- 1. If we mix a spoon of salt in water and stir it?**
The salt disappears and hides inside the water, and forms a solution.
- 2. If you put a piece of blue litmus paper into dilute hydrochloric acid or lemon juice?**
The colour of the blue litmus paper will change into red because they are acidic solutions.
- 3. If you place a drop of distilled water or sugar water on both red and blue litmus paper?**
The colour of the two litmus papers will not change.
- 4. To the red litmus paper if you dip it in soapy water or baking soda solution?**
The colour of the red litmus paper will change into blue because they are alkaline solutions.
- 5. When you heat a salt water solution until the water evaporates?**
The water will evaporate and leaves behind a white solid powder at the bottom of the dish.
- 6. If you touch heated laboratory objects before they cool down completely?**
Your hand will get burned.

Revision on Chapter 10

Reaction Between Solutions and Metals

1 Definitions:

Aqueous Solution	It is a liquid mixture, like plain water or dilute hydrochloric acid, that is used to test how metals react.
Strong Reaction	It is a fast chemical change where a metal dissolves quickly and makes many bubbles.
Weak Reaction	It is a slow chemical change where a metal dissolves slowly and makes only a few bubbles.
Chemical Energy	It is the hidden power at work when a metal changes into another substance to create a new gas.
Evaporation	It is a heating a liquid gently until the water dries up, leaving the hidden solid parts behind.
Carbonated Water	It is a liquid that contains dissolved carbon dioxide gas.

2 Give an example for:

An aqueous solution that dissolves metals	Dilute hydrochloric acid
An aqueous solution that does NOT dissolve metals	Plain water
A metal that produces a "Strong Reaction"	Aluminum
A metal that produces a "Weak Reaction"	Iron (Steel wool)
A gas produced by a chemical reaction	Hydrogen gas
A metal with an extremely stable property	Gold
A historical artifact showing metal stability	Tutankhamun's golden mask
A new substance formed after evaporation	A dry, white solid powder
Mandatory safety equipment	Safety goggles
Laboratory tools used to measure and add liquids	Pipette
Laboratory tools used for evaporation	Evaporating dish, portable gas stove (lab gas burner), wire gauze
An industrial application of chemistry	Modern recycling and water treatment facilities

3 Comparisons:

1. Aluminum vs. Iron in Dilute Hydrochloric Acid:

P.O.C	Aluminum	Iron (Steel Wool)
Speed of dissolving	It dissolves quickly.	It dissolves slowly.
Amount of bubbles	It produces many bubbles.	It produces few bubbles.
Type of reaction	Strong reaction	Weak reaction
Gas produced	Hydrogen gas	Hydrogen gas

2. Dilute Hydrochloric Acid vs. Plain Water:

P.O.C	Dilute Hydrochloric Acid	Water
Effect on aluminum and iron	It reacts with metals.	No change in the metals
Bubbles produced	Bubbles are produced.	No bubbles
Reaction result	Reaction occurs.	No reaction occurs.

3. Original Aluminum Metal vs. Solid Left After Evaporation:

P.O.C	Original Aluminum Metal	Solid Left After Evaporation
Appearance	Shiny metal	Dry, dull white powder (not shiny)
Reaction in hydrochloric acid	Dissolves and produces bubbles.	It reacts with acid and produces bubbles.

4. Gold vs. Aluminum in Strong Acids:

P.O.C	Gold	Aluminum
Stability	Extremely stable	Not stable
Reaction with acid	It does not react with acid.	It reacts with acid and produces bubbles.

4 Give a reason for:

- 1. Tutankhamun's golden mask is still beautiful today and continues to shine even after thousands of years.**

Because gold has an extremely stable property. It does not react with or dissolve in strong solutions like hydrochloric acid.

- 2. You must turn off the heat source while there is still a little liquid left in the evaporating dish.**

To let the remaining heat safely dry the liquid.

- 3. Many visible bubbles appear when aluminum or iron are put into dilute hydrochloric acid.**

Because a large amount of chemical energy is at work to change the metal into a new substance and create hydrogen gas.

- 4. A scientist must wear safety goggles and ventilate the room during the metal and acid experiment.**

Safety goggles protect the eyes, and ventilating the room safely clears out the newly created hydrogen gas and fumes so you do not breathe them in.

- 5. The dry white powder left after evaporation does not bubble or dissolve if put back into hydrochloric acid.**

Because dissolving and evaporating chemically changed the original metal into a completely new substance with different properties.

- 6. Modern factories use the technology of evaporating water from solutions that contain dissolved metals.**

Because it allows them to extract the hidden solid from the liquid to make very pure materials.

- 7. Understanding "invisible changes" (like metals dissolving) helps make Egypt's future green and rich.**

Because it teaches us that dissolved metals are not lost forever. We can use the power of chemistry to extract hidden parts, recycle old metals into clean materials, and reduce trash.

5 What happens:

1. When you add dilute hydrochloric acid to small pieces of aluminum?

A strong reaction happens, the aluminum dissolves quickly and produces many bubbles of hydrogen gas.

2. When you add plain water to a test tube containing aluminum or iron?

There are no bubbles, no reaction, and no change to the metals.

3. If diluted hydrochloric acid accidentally splashes and touches your skin?

You must immediately wash it off right away with running water to stay safe.

4. To the dissolved aluminum liquid when you gently heat it in an evaporating dish?

The liquid evaporates and leaves behind a dry, white solid powder.

5. When you place gold into a strong solution like hydrochloric acid?

The gold will not react with or dissolve in the acid because it is extremely stable.

6. To old, discarded metal items when we use the power of chemistry?

Instead of throwing them away, they are turned back into clean, usable materials through recycling.

Model Exams



Chapter 1

Conditions for Burning

20



1 A. Study the following figure and then answer the following questions:

1. What is the name of the tool used by craftsman?

.....

2. What specific gas was being supplied to the fire?

.....

3. What is the importance of this process?

.....



B. What happens when:

1. A burning candle is placed inside a tightly closed glass jar with a lid and no gaps?

.....

2. A lit incense stick is put into a gas jar filled entirely with pure oxygen gas?

.....

2 A. Cross out the Odd word and state the reason:

- Sun / Coal / Wind / Water

Odd word: Reason:

B. Write the scientific term for:

1. It is a clear, colorless liquid used in experiments to check for the presence of carbon dioxide gas. (.....)

2. It is a modern device that uses a sensor to show the percentage of a gas on a screen in digital numbers. (.....)

C. What's is meant by:

- Atmospheric air?

.....

D. Put (✓) for the correct answer or (X) for the incorrect answer:

- A single glass gas detector tube can be washed and reused multiple times to measure the exact percentages of both oxygen and carbon dioxide. ()

3 A. Choose the correct answer:

1. To collect a gas in a jar using a water tank, a student should
(a) empty the jar of water completely and fill it 100% with gas
(b) fill the jar upright with exactly 30% of the gas
(c) turn the water-filled jar upside down and fill 70% of it with gas
(d) pour the gas directly over the water surface with the lid removed
2. The environmental phenomenon known as "global warming" is directly caused today by producing too much from burning fuels.
(a) nitrogen gas
(b) water vapour
(c) oxygen gas
(d) carbon dioxide gas

B. Give a reason for:

1. A candle flame keeps burning but becomes unstable when there is only a gap cut into the clay at the bottom of the jar.
.....
2. You must wear safety goggles when conducting a science experiment using limewater.
.....
3. 💡 Egypt is gaining attention for building the giant Benban Solar Park in Aswan.
.....

4 A. Correct the underlined word:

1. Nitrogen gas makes up about 21% of the atmospheric air. (.....)
2. The gas detector tube contains a sensor inside whose colour changes when it reacts with a specific gas. (.....)

B. Complete the following sentences

1. For things to keep burning stably, fresh air must constantly flow and of the container.
2. 💡 Ancient Egyptians burned animal and plant to light temples.

C. How does the amount of oxygen and carbon dioxide gases change after burning?

Chapter 2

Respiration

20



Enrichment
Questions

1 A. Choose the correct answer:

- When comparing the composition of gases, which gas increases significantly in a closed plastic bag if we breathe out in it.
- (a) Oxygen (b) Nitrogen (c) Carbon dioxide (d) Water vapor

B. Complete the following sentences:

1. Through the around the lungs, is taken into the blood, while is let out into the air.
2. Room air contains about oxygen and about carbon dioxide.
3. By putting your hand on your chest, you can feel that it gets during inhalation and during exhalation.
4. Unlike humans and cats, fish let out carbon dioxide using their

2 A. Correct the underlined word:

1. Exhaled air contains a very high percentage of oxygen gas.
(.....)
2. The windpipe is the organ responsible for pumping oxygen-rich blood to the whole body.
(.....)

B. Give a reason for:

1. The colour of clear limewater turns milky white when a in a plastic bag you breathed out into it.
.....
2. The human body needs the heart to work alongside the lungs during the respiration process.
.....
3. The chest gets bigger when a person inhales (breathes in).
.....

3 A. Put (✓) for the correct answer or (X) for the incorrect answer:

- Inhaled air travels down through the food pipe to reach the left and right lungs. ()

B. Write the scientific term for:

- It is the specific respiratory tube that allows inhaled air to travel from the nose and mouth down into the chest. (.....)
- They are the tiny air sacs inside the lungs, surrounded by blood vessels, where the exchange of oxygen and carbon dioxide takes place. (.....)

C. What is meant by:

- Respiration (Breathing)?

.....

4 A. Cross out the Odd word and state the reason:

- Nose – Windpipe – Heart – Lungs

The odd word: The reason:

- Taking in oxygen – Chest gets bigger – Letting out carbon dioxide – Inhalation

The odd word: The reason:

B. What happens when:

- Blood passes through the tiny blood vessels surrounding the alveoli inside the lungs during respiration?

.....

- You exhale (breathe out) air? (According to the path of air)

.....

C. Mention the importance of:

- The windpipe

.....

Chapter 3

Digestion

20



Enrichment
Questions

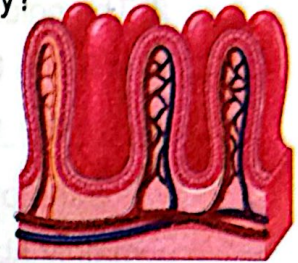
1 A. Study the following figure, and then answer the following questions:

1. What is the scientific name of these bumps? And where are they?

.....

2. What is the function of these small bumps?

W
.....



B. What happens when:

1. Dilute iodine solution is added to a warmed test tube containing only a mixture of starch and water?

.....

2. The small intestine had a completely flat inner wall like a flat cloth?

.....

3. The undigested food enters the large intestine?

.....

2 A. Put (✓) for the correct answer or (X) for the incorrect answer:

1. Digestion only means making food smaller in size without changing its chemical form.

()

2. All animals have exactly the same digestive system.

()

B. Complete the following sentences:

1. Food leaves the digestive tract through an opening called the

2. Digestive juices are produced not only in the mouth, but also in the stomach and

3. The liver converts some absorbed nutrients into a form that is easy to use and stores them as

3 A. Correct the underlined word in the following sentences:

1. Harmful substances broken down by the liver are eliminated from the body in the form of feces. (.....)
2. The color of starch mixed with water changes into red when adding iodine solution to it. (.....)

B. Write the scientific term for:

1. It is the organ in the digestive tract where nutrients from digested food are mainly absorbed. (.....)
2. It is the continuous path of food traveling from the mouth to the anus. (.....)
3. It is a digestive juice produced in the mouth that specifically has the function of breaking down starch. (.....)

4 A. Choose the correct answer:

- The specific digestive juice produced by the liver has a primary function to help the human body break down and absorb
(a) starch (b) water (c) fat (d) blood

B. Cross out the Odd word and state the reason:

1. Mouth – Stomach – food pipe – Small intestine

Odd word: Reason:

2. Mouth – Anus – large intestine – liver

Odd word: Reason:

C. Give a reason for:

1. The test tubes in the starch digestion experiment are placed in a beaker containing hot water of about 40°C for a few minutes.
.....
2. The nutrients absorbed in the small intestine are carried to the whole body by the blood, passing through the liver.
.....

Chapter 4

Circulation and Excretion

20



Enrichment
Questions

1 A. Choose the correct answer:

- The sequence of blood circulation starting from the lungs is
 - (a) Lungs → Whole body → Heart → Blood
 - (b) Lungs → Kidney → Whole body → Heart
 - (c) Lungs → Heart → Blood → Whole body
 - (d) Lungs → Heart → Kidneys → Bladder



B. Put (✓) for the correct answer or (X) for the incorrect answer:

- Ancient Egyptians placed the heart in a Canopic jar with a Baboon head because they believed it was the "Place of Wisdom". ()

C. Give a reason for:

1. The number of heart pulses (heartbeats) increases significantly after exercising.
.....
2. Blood returning from the whole body must be sent to the lungs before it circulates back to the rest of the body.
.....



D. Study the following figure and then answer:

- Which organ was protected by ancient Egyptians in each of the two Canopic jars (1) and (2)?
.....



(1) (2)

2 A. Correct the underlined word:

1. You can easily feel your heartbeat as a pulse at your wrist, neck, or elbow.
(.....)
2. Inside the human abdomen, the large intestine is an organ located around the liver.
(.....)

B. Write the scientific term:

1. It is the continuous movement of the heart when it is pumping out blood.
(.....)
2. It is the liquid containing waste products and extra water that is produced by the kidneys.
(.....)

C. Complete the following sentences:

- The blood pumped out from the heart carries and to the whole body.

3 A. Cross out the Odd word and state the reason:

- Oxygen gas – Nutrients – Red blood – Carbon dioxide

Odd word: Reason:

B. Compare between:

- Blood represented by the red color and blood represented by the blue color in scientific diagrams. (In terms of the specific gases and materials they carry)

C. What happens when:

1. Blood carrying waste products and extra water passes through the kidneys?
.....
2. You put your fingers near the base of your thumb on your wrist after exercising?
.....

D. What is meant by:

- Blood Circulation?

4 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Imsety Canopic jar	Ⓐ stores urine temporarily until is discharged out the body.
2. Ribs	Ⓑ filter waste products and extra water from the blood.
3. Kidneys	Ⓒ protected the lungs in ancient Egyptian mummies.
4. Bladder	Ⓓ protected the liver in ancient Egyptian mummies.
	Ⓔ protect the vital organs located in the chest.

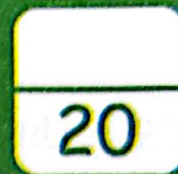
① ② ③ ④

B. Mention the importance of:

- Blood.

Chapter 5

Photosynthesis



1 A. Cross out the Odd word and state the reason:

- Taking in oxygen / Releasing energy / Occurs day and night / Production of starch

Odd word: Reason:

B. Complete the following sentences:

1. Plants use the energy of sunlight to make their food, and this process produces a nutrient substance called
2. During the starch test, ethanol is warmed in a hot water bath to remove the colour from the plant leaf.

C. Mention the importance of:

1. The gas detector tube in the gas exchange experiment.
.....
2. Sunlight for plants.
.....

2 A. Correct the underlined word:

- During the nighttime, a plant only breathes, taking in carbon dioxide gas.

(.....)

B. Write the scientific term:

1. It is the highly flammable liquid used in a hot water bath to remove the green color from a plant leaf during the starch test. (.....)
2. It is the vital biological process occurring day and night where a plant takes in oxygen and releases carbon dioxide to release energy. (.....)

C. Compare between each of the following:

Point of Comparison	Photosynthesis	Respiration
Purpose of the process		
Gas consumed (taken in)		

3 A. Choose the correct answer:

- The iodine solution changes its colour from yellowish-brown to blue-black indicating the presence of
- (a) oxygen gas (b) carbon dioxide gas
 (c) starch (d) ethanol

B. Put (✓) for the correct answer or (X) for the incorrect answer:

- Plants stop breathing during the day to focus entirely on the photosynthesis process. ()

C. Give a reason for:

- A plant kept continuously in a completely dark room will fail to produce its own food.
.....
- A healthy plant's leaves being arranged without overlapping.
.....

D. Study the following figure, then answer:

- What you predict about changes (increase/decrease) for both oxygen and carbon dioxide levels inside the bag after one hour?
.....



4 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Transpiration	(a) the food produced by leaves when sunlight hits them.
2. Starch	(b) the gas consumed by plants during respiration.
	(c) responsible for forming water droplets inside the sealed bag.

①

②

B. What happens when:

- The percentages of carbon dioxide and oxygen inside a transparent bag covering a plant after being left in a sunny place for one hour?
.....
- You add dilute iodine solution to a leaf that has been exposed to sunlight for 5 hours?
.....

C. What's meant by:

- Photosynthesis process?
.....



1 A. Cross out the Odd word and state the reason:

- Roots / Stem / Stomata/ Leaves

Odd word:

Reason:

B. Complete the following sentences:

1. Water is transported inside the plant in a specific order: first the, then the, and finally the leaves.
2. The beautiful green plants along the Nile act as a natural because they take in the humans breathe out.

C. Study the following figure and then answer the following question:

- a) What is the name of the plant shown in this figure?



- b) How does the shape of leaves help the plant produce nutrients efficiently?

2 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Stomata	a) works to lower the temperature around the plant like a natural sprinkler.
2. Papyrus	b) has strong, straight internal water paths to carry water to the top at once.
3. Photosynthesis	c) tiny pores mostly on the underside of leaves that act as exits for water vapor.
4. Transpiration	d) acts as a "natural air purifier" to keep the air clean.

①

②

③

④

B. Write the scientific term:

1. It is the process in which water inside the plant changes into water vapor and is released into the air from the leaves. (.....)
2. It is the nutrient produced by plants using strong sunlight during the photosynthesis process. (.....)

C. Compare between each of the following:

- The function of both plant's roots and the leaves.

3 A. Choose the correct answer:

1. The transportation of water inside a plant follows a specific path to ensure the plant's survival. The correct order of this path is

- (a) Stem → Roots → Leaves (b) Leaves → Stem → Roots
(c) Roots → Stem → Leaves (d) Roots → Leaves → Stem

2. 💡 The plant used by ancient Egyptians to make paper was

- (a) lotus (b) palm tree (c) papyrus (d) water lily

B. Give a reason for:

1. A wilted plant successfully recovers after a while when you water its base.
.....

2. 💡 It feels remarkably cool when you get close to plants in the desert country of Egypt.
.....

C. Mention the importance of:

- Using coloured water in the flask of plant experiment.
.....



4 A. Correct the underlined word:

1. The plant gets rid of excess water through its leaves in the form of oxygen gas.
(.....)

2. Before soaking the plant in the coloured water flask, you must wash the roots with water to remove any leaves.
(.....)

B. What happens when:

1. You place a clear plastic bag tightly over a plant without leaves on a sunny day?
.....

2. 💡 Green plants along the Nile River perform the process of photosynthesis?
.....

3. Stomata on the underside of a plant's leaves are completely blocked?
.....

Chapter 7

Food Chain

20



Enrichment
Questions

1 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Transpiration	(a) animals that eat plants.
2. Photosynthesis	(b) process by which plants release water absorbed from their roots into the air.
3. Herbivore	(c) animals that eat other animals.
	(d) process by which plants use sunlight and carbon dioxide to produce nutrients.

① ② ③

B. Complete the following sentences:

- Living organisms, air, and water are connected by bonds in the ecosystem.
- A food chain always starts with and ends with large

C. Mention the importance of:

- Sunlight for plants.
.....
- The arrow (→) in a food chain diagram.
.....

2 A. Correct the underlined word in the following sentence:

- A human is considered a carnivore because it has the ability to eat both plants and animals. (.....)

B. Write the scientific term for each of the following:

- It is the "eat and be eaten" connection (feeding relationship) between living organisms in an ecosystem. (.....)
- They are animals that eat other animals. (.....)

C. Compare between each of the following:

P.O.C	Herbivores	Carnivores
Two examples for Each		

3 A. Choose the correct answer:

1. According to the connection of living organisms through air, which of the following statements is true?
 - (a) Plants use oxygen to produce their nutrients.
 - (b) Animals use the oxygen released by plants to breathe.
 - (c) Animals release oxygen into the air for plants to use.
 - (a) Plants breathe out carbon dioxide gas.
2. According to the connection of living organisms through water, the water on Earth is constantly
 - (a) disappearing into space
 - (b) changing its shape and circulating
 - (c) decreasing in total amount
 - (d) remaining stationary underground

B. Give a reason for:

1. Plants (Producers) are placed at the very beginning of the food chain.

.....

2. The environment where animals can successfully breathe is continually maintained on Earth.

.....

C. Study the following components, then answer the following questions:

(Frog / Grass / Snake / Grasshopper)

1. Construct a complete food chain from these components, illustrating the proper direction of energy flow using arrows.

.....

2. What will happen to the grasshopper and snake populations if the frogs are completely removed from the ecosystem?

.....

4 A. Cross out the odd word, and state the reason:

1. Grass – Wheat – Tree – Rabbit

Odd word:

Reason:

2. Eagle – Snake – Frog – Rabbit

Odd word:

Reason:

B. What happens when:

1. Plants completely disappear from the ecosystem?

(In terms of the amount of oxygen and carbon dioxide gases in the air)

.....

2. The transpiration process stops completely in an ecosystem?

.....

C. What' is meant by: Producers?

.....

Chapter 8

Food Chains in Egypt

20



Enrichment
Questions

1 A. Cross out the Odd word and state the reason:

- Nile tilapia — Nile perch — Small shrimp — Egyptian vulture

Odd word: Reason:

B. Complete the following sentences:

1. The organisms that make their own food using sunlight are called
2. In the aquatic food chain, algae and water plants are eaten by herbivorous fish like the

C. Mention the Importance of:

1. Sunlight for the food pyramid.
.....
2. Fennec fox according to the balance of the desert ecosystem.
.....

2 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Nile crocodile	① is a producer that can survive in dry environment.
2. Desert shrub	② is the king of the Nile River aquatic environment.
	③ is a carnivore that sustains the balance of the desert ecosystem.

①

②

B. Write the scientific term:

1. It is a diagram representing a food chain where living organisms are connected by an "eat and be eaten" relationship. (.....)
2. They are the remains of ancient living organisms preserved in rocks that prove a desert was once an ocean tens of millions of years ago. (.....)

C. Compare between:

- The food chain in the Nile River and The food chain in the desert by giving one example of a producer and one example of a top carnivore for each environment
.....

3 A. Put (✓) for the correct answer or (x) for the incorrect answer:

1. 💡 Wadi al-Hitan, is an ocean now but used to be a desert tens of millions of years ago. ()
2. 💡 Egypt has completely similar food chains in the Nile River and deserts. ()

B. Give a reason for

1. 💡 The bottom of the food pyramid is always supported by plants.
.....

2. Grasshoppers are placed directly after desert shrubs and grass in the desert food chain.
.....

C. Study the following organisms:(Nile Crocodile, Algae, Nile Tilapia, Nile Perch).

- Using these organisms to form a food chain representing the Nile River ecosystem, and identify which organism acts as the king of this ecosystem.
.....

4 A. Correct the underlined word:

1. The fennec fox is known as the king of the Deserts. (.....)
2. Papyrus is a carnivore in the desert food chain. (.....)
3. The food chains always begin with large carnivores. (.....)

B. What happens to:

1. The carnivores if all the plants (producers) in the desert die out?
.....
2. The Nile tilapia if all the small shrimp disappear from the Nile River?
.....

Chapter 9

Properties of Solutions

20



1 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Glass rod	Ⓐ is placed over a portable gas stove to support the evaporating dish.
2. Wire gauze	Ⓑ accurately transfers solution from a test tube to an evaporating dish.
3. Pipette	Ⓒ carefully adds exactly one drop of solution onto litmus paper.

① ② ③

B. Complete the following sentences:

- Sparkling water, also known as water, as it contains gas dissolved in water.
- During an experiment, you should always wear safety to protect your eyes.

C. Mention the importance of:

- ⚡ Natron for Ancient Egyptians.

- Litmus paper.

2 A. Cross out the Odd word and state the reason:

- Lemon juice – Vinegar – Sugar water – Dilute hydrochloric acid

Odd word: Reason:

B. Write the scientific term:

- It is the process used to identify if a dissolved substance in a solution is a solid or a gas by heating the liquid. (.....)
- It is the classification of a water solution that does not change the colour of either red or blue litmus paper. (.....)

⚡ C. Compare between:

P.O.C	Lemon juice	Soapy water
Type of solution		
Everyday uses		

3 A. Choose the correct answer:

1. 💡 Farmers check whether the soil is acidic or alkaline to ensure the perfect conditions for growing crops like
(a) rice and corn (b) cotton and wheat
(c) lemons and tomatoes (d) apples and oranges
2. Diluted hydrochloric acid is classified as a(n) solution.
(a) acidic (b) neutral (c) alkaline (d) gaseous

B. Give a reason for:

1. 💡 Scientists monitoring wastewater from factories.
.....
2. 💡 Farmers are always checking whether the soil is acidic or alkaline.
.....
3. You must never touch the evaporating dish or the wire gauze immediately after the heating experiment.
.....

4 A. Correct the underlined word:

1. When testing multiple solutions during an experiment, you must rinse the pipette with water and wipe it off every time you change the solution before placing a drop on the litmus paper. (.....)
2. When we mix a substance with water and it disappears, it forms a gas. (.....)

B. What happens when:

1. You place a piece of red litmus paper into a beaker containing a baking soda solution?
.....
2. A student brings their face close to an evaporating dish to smell heated chemical fumes directly?
.....

C. What's Meant by: An alkaline solution?

Chapter 10

Reaction Between Solutions and Metals

20



Enrichment
Questions

1 A. Put (✓) for the correct answer or (X) for the incorrect answer:

- The dry white powder remaining after evaporating dissolved aluminum in dilute hydrochloric acid will produce many bubbles if placed back into dilute hydrochloric acid again. ()

B. Complete the following sentences:

- When a metal changes into another substance during a chemical reaction, a large amount of energy is at work to create a new gas.
- An aqueous solution that turns blue litmus paper red is considered, such as dilute hydrochloric acid.

C. Mention the importance of the following:

- The technology of evaporating water from a solution containing dissolved metals in modern factories.
.....
- Turning off the lab gas burner while there is still a little liquid left in the evaporating dish.
.....

2 A. Cross out the Odd word and state the reason:

- Aluminum / Iron / Gold

Odd word: Reason:

B. Write the scientific term:

- It is the gas produced as bubbles when iron or aluminum dissolves in dilute hydrochloric acid. (.....)
- It is the property of gold that prevents it from reacting with or dissolving in strong solutions. (.....)

C. Compare between the following:

- The reaction of Aluminum and the reaction of Iron when placed in dilute hydrochloric acid:

P.O.C	Aluminum placed in dilute hydrochloric acid	Iron placed in dilute hydrochloric acid
Amount of bubbles produced		

3 A. Choose the correct answer:

1. A scientist adds small pieces of a shiny solid to an aqueous solution. The solid dissolves quickly and produces a large amount of bubbles. This observation confirms the occurrence of a
(a) weak reaction in an alkaline solution
(b) strong reaction in dilute hydrochloric acid
(c) physical change in plain water
(d) neutral reaction in carbonated water
2. If dilute hydrochloric acid accidentally touches your skin during an experiment, you must immediately
(a) wipe it off with a towel (b) wash it off with running water
(c) leave it as it is (d) complete your experiment

B. Give a reason for:

1.  Tutankhamun's golden mask maintains its beautiful shine even after thousands of years.
.....
2. Placing a rolled-up ball of steel wool (iron) into a test tube filled with plain water produces absolutely no gas bubbles.
.....

C. What is meant by:

- A "weak reaction" when a metal is placed in an aqueous solution?
.....

4 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Alkaline solution	(a) contains dissolved carbon dioxide gas.
2. Carbonated water	(b) turns red litmus paper blue.
	(c) causes aluminum to dissolve quickly.

①

②

③

B. Mention one example for:

1. A laboratory tool used to accurately add dilute hydrochloric acid or water into a test tube. (.....)
2. A gas produced when metals like iron or aluminum dissolve in acidic solutions. (.....)
3.  A physical characteristic of original aluminum that completely disappears after it reacts with acid and is evaporated into a new powder. (.....)

Pony Final Exams

Model Exam 1

20



Enrichment
Questions

1 A. Choose the correct answer:

- Small Intestine → Blood → Organ X → Body Cells
Knowing that Organ X stores nutrients. What is Organ X?
(a) Stomach (b) Liver (c) Lungs (d) Anus

B. Write the scientific term:

1. It is the gas that makes up about 78% of the air and doesn't help things burn.
(.....)
2. They are the small bumps on the inside of the small intestine that increases surface area to absorb nutrients efficiently.
(.....)
3. It is the process of changing water inside a plant into water vapour that is released into the air from the leaves.
(.....)
4. It is the group of living organisms that can make their own food using sunlight.
(.....)

2 A. Put True (✓) or False (X):

- The air we breathe out contains more oxygen than the air we breathe in. ()

B. Give a reason for:

1. Clear limewater turns milky white when mixed with the gas produced after a candle burns.
.....
2. We must chew our food well and mix it with saliva before swallowing.
.....
3. The kidneys are considered one of the most important organs in the human body.
.....
4.  Ancient Egyptians relied on Natron powder when preserving mummies.
.....

3 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. The Heart	(a) works like a pump to send blood to the whole body.
2. Blood	(b) carries oxygen and nutrients to the whole body.
	(c) absorbs water from undigested waste.

①

②

B. What happens when:

1. You place a piece of aluminum into dilute hydrochloric acid?

.....

2. You cover a green plant leaf completely with an aluminum foil for three days?

.....

3. You place a white flower in a cup of red-coloured water for several hours?

.....

4 A. Correct the underlined word in the following sentences:

1. Fish use their lungs to take in oxygen from the water. (.....)

2. During the day, plants take in oxygen from the air to perform photosynthesis.
(.....)

B. Compare between the following:

1. The gas exchange of a plant at 12:00 PM (Noon) versus 12:00 AM (Midnight):

Point of Comparison	12:00 PM (Noon)	12:00 AM (Midnight)
Gas exchange		

2. The desert food chain and the Nile River food chain regarding example of one producer:

Point of Comparison	Desert Food Chain	Nile River Food Chain
Example of producer		

3. Lemon juice and baking soda solution according to the type of solution:

Point of Comparison	Lemon Juice	Baking Soda Solution
Type of solution		



1 A. Cross out the Odd word and state the reason:

- Heart – Lungs – Kidneys – Stomach

Odd word: Reason:

B. Complete the following sentences:

1. In the food pyramid, herbivores that eat plants directly are known as primary
2. The blood pumped out from the heart carries oxygen and to the whole body.
3. After passing through the small intestine, water is absorbed from the remaining waste in the
4. 💡 The technology of evaporating water from a solution is used to extract dissolved to make pure materials.

2 A. Correct the underlined word in the following sentence:

- The windpipe converts some nutrients into a form that is easy to use and breaks down harmful substances. (.....)

B. Mention the importance (function) of each of the following:

1. Saliva in the mouth.
.....
2. The heart in the circulatory system.
.....
3. The stems in a plant.
.....
4. Oxygen gas for combustion (burning).
.....

3 A. Put True (✓) or False (X):

1. Putting a lit incense stick into a jar of pure nitrogen will make it burn brighter. ()
2. Fennec foxes and Egyptian vultures are considered carnivores in the desert food chain. ()

B. Write the scientific term:

1. It is the process of breaking down food into small pieces so the body can absorb it. (.....)
2. It is the tube that air goes through to reach the lungs from the nose and mouth. (.....)
3. It is the diagram showing the "eat and be eaten" relationships starting with producers. (.....)

4 A. Choose the correct answer:

1. Where are the digested nutrients mainly absorbed into the blood?
(a) Food pipe (b) Stomach
(c) Large intestine (d) Small intestine
2. If blue litmus paper turns red when dipped in a solution, the solution is
(a) alkaline (b) neutral (c) acidic (d) salty

B. Give a reason for:

1. Plants are considered the base of any food pyramid.
.....
2. We must break down food with our teeth.
.....
3. A wilted plant recovers and stands tall a while after you water its base.
.....



1 A. Correct the underlined word in the following sentence:

- The amount of oxygen increases because it is newly produced when things burn. (.....)

B. What is meant by:

1. 💡 Chemical Eye?

.....

2. Digestion?

.....

3. Food chain?

.....

4. Gas exchange in the lungs?

.....

2 A. Choose the correct answer:

- The organ that breaks down harmful substances so they can be eliminated in urine is the:

Ⓐ Heart

Ⓑ Lungs

Ⓒ Liver

Ⓓ Stomach

B. What happens when:

1. Carnivores disappear completely from a food chain?

.....

2. A factory heats a dilute hydrochloric acid solution containing dissolved aluminum?

.....

3. Plants breathe during the nighttime?

.....

4. 💡 Ancient Egyptians pump more air into a fire using a bellows?

.....

3 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Heart	(a) collects unnecessary waste and water to form urine.
2. Kidney	(b) pumps blood to carry oxygen and nutrients to the whole body.
	(c) absorbs water from undigested food.

①

②

B. Compare between the following:

1.  The leaves of the lotus (water lily) and desert plants, regarding their shape and purpose:

Point of Comparison	Lotus	Desert plants
Shape of leaves and purpose		

2. Oxygen content in blood returned from the body and the blood comes out of lung:

Point of Comparison	Blood from the body	Blood from the lungs
Oxygen Content		

3. Jerboas and algae regarding their role in their food chains:

Point of Comparison	Jerboas	Algae
Role in food chain		

4 A. Put True (✓) or False (X):

- All organs in the abdomen, chest, and lower back are completely isolated and do not connect to each other. ()
- In the desert food chain, grasshoppers eat fennec foxes. ()

B. Complete the following sentences:

- Plants use sunlight, water, and to produce starch.
- The internal wall of the small intestine looks like that increases the surface area.
-  Instead of throwing away old metal items, we can use the power of chemistry to them back into clean materials.



1 A. Put True (✓) or False (X):

- The parts of the plant stems and leaves that turn red in coloured water show the paths used to carry water. ()

B. Write the scientific term:

1. It is the process of breaking down food with teeth and changing it into a form that is easy to absorb into the body. (.....)
2. It is the gas released by plants into the air when they make starch in the sunlight. (.....)
3. 💡 They are the Scientists continuously monitor the quality of factory wastewater to ensure it is safe. (.....)
4. It is the liquid used in the experiment that does not dissolve aluminum or iron and produces no gas bubbles. (.....)

2 A. Cross out the odd word and state the reason:

- Algae – Water plants – Desert shrubs – Nile crocodile

Odd word: Reason:

B. Give a reason for:

1. Iodine solution turns dark blue/black when added to a leaf that was kept in sunlight.
.....
2. 💡 Water in the papyrus plant can reach all the way to the top at once.
.....
3. A standing candle keeps burning if there are gaps at both the top and bottom of the jar.
.....
4. Litmus paper is a very useful tool in a chemistry lab.
.....

3 A. Choose the correct answer:

- Which gas do plants take in from the air when they breathe to stay alive?
(a) Oxygen (b) Carbon dioxide
(c) Nitrogen (d) Hydrogen
-  Soapy water used for cleaning is an example of a/an substance.
(a) acidic (b) alkaline (c) neutral (d) salty

B. Mention the importance of:

- Herbivores in the food pyramid.
.....

- The roots of a plant.
.....

- Blood in the human circulatory system.
.....

4 A. Correct the underlined word in the following sentences:

- Food passes from the mouth to the liver, and then to the stomach.
(.....)
- The tiny, balloon-like structures inside the lungs where oxygen enters the blood are called bladder.
(.....)

B. Study the following figure, then answer:

- What phenomenon is being observed when water droplets appear inside the bag?
.....
- From which specific tiny openings does the water vapor escape into the bag?
.....
- What would happen if we used a plant with all its leaves removed for this experiment?
.....





1 A. Correct the underlined word in the following sentence:

- Carbon dioxide in the blood is let out into the air through the heart.

(.....)

B. Complete the following sentences:

- Food that enters from the mouth is carried in the order of mouth, food pipe,, small intestine, and large intestine.
- The kidneys filter waste products from the blood and eliminate them as
- The food chain in the Nile River starts with and water plants.
-  Acidic juice is commonly used in cooking.

2 A. Put True (✓) or False (X):

- Plants transport water in the order of: Leaves → Stems → Roots ()
- Even if a metal dissolves and becomes invisible in a solution, its original parts are still hidden inside ()

B. What happens when:

- You leave a wilted plant without water for a long time?
.....
- You drop dilute iodine solution onto a slice of white potato which is rich in starch?
.....
- Undigested food reaches the large intestine?
.....

3 A. Choose the correct answer:

- What is produced in the leaves of plants when sunlight hits them?
- (a) Minerals (b) Starch (c) Natron (d) Saliva

B. Write the scientific term:

1. They are strips of paper used to test whether a solution is acidic, neutral, or alkaline. (.....)
2. It is the gas taken into the blood from the air through the lungs' blood vessels. (.....)
3. It is the process where green plants take in carbon dioxide and release oxygen using sunlight. (.....)
4. It is the internal organ that stores nutrients and breaks down harmful substances. (.....)

4 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Stomach	(a) removes unnecessary wastes from the blood.
2. Anus	(b) is an opening which feces leave the body through.
	(c) receives food from the food pipe to mix with digestive juices.

① ②

B. Give a reason for:

1.  Ancient Egyptians used plant oil and animal fat in temples and pyramids.
.....
2. The air we breathe out is chemically different from the air we breathe in.
.....
3. The Nile crocodile is placed at the top of the Nile River food chain.
.....



1 A. Put True (✓) or False (X):

- Plants only perform gas exchange during the daytime and stop breathing completely at night. ()

B. Mention the importance of:

- Oxygen gas for humans and fire.
.....

- Sunlight for plant survival.
.....

- The beautiful green plants along the Nile River regarding the air.
.....

- Dilute hydrochloric acid in metal chemistry.
.....

2 A. Choose the correct answer:

- Oxygen + Plant → Energy +

(a) Limewater

(b) Nitrogen

(c) Carbon dioxide

(d) Iodine solution

- What carries the oxygen taken in by the lungs to the whole body?

(a) Food pipe

(b) Windpipe

(c) Blood

(d) Kidneys

B. Complete the following sentences:

- In the digestive system, food travels from the stomach directly into the

- A neutral solution, like salt water, does not change the colour of either blue or red

- The diagram of a food chain is known as a food

3 A. Correct the underlined word in the following sentence:

- The technology of freezing water from a solution containing dissolved metal is used to extract the solid metal.

B. Compare between the following:

1. The heart and the lungs regarding their main function:

P.O.C	Heart	Lungs
Main function		

2. Villi and alveoli the regarding function of each:

P.O.C	Villi	Alveoli
Function		

3. Desert Shrubs and fennec foxes regarding how they get their food:

P.O.C	Desert Shrubs	Fennec foxes
Way to get food		

4. Oxygen and carbon dioxide regarding their movement during human respiration:

P.O.C	Oxygen	Carbon dioxide
Movement		

4 A. Cross out the Odd word and state the reason:

1. Jerboa – Fennec fox – Nile Tilapia – Egyptian Vulture

Odd word: Reason:

2. Lemon juice – Vinegar – Hydrochloric acid – Soapy water

Odd word: Reason:

B. Write the scientific term:

1. They are the organs in the lower back that filter and take waste out of the body as urine. (.....)
2. They are the small animals in the desert that eat grass and shrubs, acting as primary consumers. (.....)
3. It is a mixture of gases containing nitrogen, oxygen, and carbon dioxide. (.....)

1 A. Choose the correct answer:

- When iodine solution is added to saliva mixed with a starch solution,
 - Ⓐ the colour changes to dark blue-black
 - Ⓑ the starch turns into a solid metal
 - Ⓒ the colour does not change because the starch was broken down
 - Ⓓ the solution becomes strongly alkaline

B. Give a reason for:

1. When evaporating a liquid over a portable gas stove, you should turn off the heat while a little liquid is still left.
.....
2. Blood returning to the heart from the body is pumped to the lungs immediately.
.....
3. Small cuts are made in each leaf the day before testing them for starch.
.....
4. The kidneys are considered vital for human survival.
.....

2 A. Correct the underlined word in the following sentences:

1. Animals that eat plants directly are called carnivores. (.....)
2. Through the blood vessels around the lungs from the air is taken into the blood. (.....)

B. Write the scientific term:

1. It is the tube connecting the mouth to the stomach in the digestive tract. (.....)
2.  It is a hand-operated historical tool used to blow a strong current of air into a fire. (.....)
3. It is the liquid waste that is produced when the kidneys filter waste products from the blood. (.....)

3 A. Put True (✓) or False (X):

- The food chain in the Nile River ecosystem always starts with large carnivores such as crocodiles. ()

B. What happens when:

1. You dip blue litmus paper into salt water?

.....

2. Your body's cells produce a lot of carbon dioxide waste?

.....

3. You put a lit incense stick into a jar of pure nitrogen?

.....

4. You pour dilute hydrochloric acid on a piece of iron (steel wool)?

.....

4 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Windpipe	Ⓐ converts nutrients into an easy-to-use form and breaks down harmful substances.
2. Mouth	Ⓑ is the first organ in the digestive tract.
	Ⓒ is the tube through which air reaches the two lungs.

① ②

B. Mention the importance of:

1. The Large Intestine.

.....

2. Photosynthesis for plants.

.....

3. Limewater in science experiments.

.....



1 A. Cross out the odd word and state the reason:

- Grasshoppers – Jerboas – Nile tilapia – Fennec foxes

Odd word: Reason:

B. Complete the following sentences:

- During the day, plants actively take in carbon dioxide and release
- During respiration, tubes are scientific tools used to check the exact percentage of gases in a plastic bag.
- The process when a plant releases water vapor into the air from its leaves is called
- In, the percentage of Nitrogen gas is the greatest.

2 A. Put True (✓) or False (x):

- Wadi al-Hitan is a desert now, but it is filled with fossils from when it used to be an ocean. ()
- Saliva begins the digestion process in the mouth by breaking down starch. ()

B. Give a reason for:

- The liver is considered a vital organ for purifying the human body.
.....
- A lit incense stick burns very brightly when placed into a jar of pure oxygen.
.....
- Animals cannot be the base of a food pyramid.
.....

3 A. Correct the underlined word in the following sentence:

- Blood rich in oxygen is breathed out from the nose and mouth as a waste gas.

B. Write the scientific term for:

1. It is the main organs of the respiratory system where gas exchange occurs.
(.....)
2.  It is an acidic substance commonly found in kitchens, used for cooking.
(.....)
3. They are the animals in the food chain that eat plants, such as grasshoppers and rabbits.
(.....)
4.  It is the process of turning old metal items back into clean, usable materials using chemistry.
(.....)

4 A. Choose the correct answer:

1. In the experiment to observe the path of water in a plant, what is used to make the water path in plant visible?
☐ (a) Iodine solution ☐ (b) Ethanol
☐ (c) Coloured water ☐ (d) Limewater
2. Where is the stomach located in the human body?
☐ (a) Inside the chest, between the lungs
☐ (b) In the lower back, on the back side
☐ (c) In the abdomen, at the top
☐ (d) Inside the head.

B. Compare between the following:

1. Algae and the Nile crocodile regarding their position in the food chain:

P.O.C	Algae	Nile Crocodile
Position in the food chain		

2. The small intestine and the large intestine regarding their main absorption role:

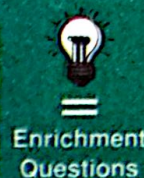
P.O.C	Small intestine	Large intestine
Main absorption role		

3. Respiration in humans and photosynthesis in plants regarding oxygen gas direction:

P.O.C	Respiration	Photosynthesis
Oxygen gas direction		

Pony Final Exams

Model Exam 9



1 A. Choose the correct answer:

- Why is the chemical recovery of dissolved metals important for "Egypt's Future"?
 - It makes the metals completely disappear.
 - It turns metals into plastic.
 - It allows us to recycle old materials, reducing trash.
 - It creates more pollution in the Nile.

B. What is meant by:

1. The digestive tract?

2. Breathing?

3. Stomata?

4. Gas Monitor?

2 A. Put True (✓) or False (X):

- Tutankhamun's mask shines because gold has extremely stable properties and does not dissolve in strong solutions. ()

B. Mention the importance of:

1. Sunlight in the process of photosynthesis.

2. The windpipe in the human body.

3. Oxygen in the air.

4. The alveoli in the respiratory system.

3 A. Correct the underlined word in the following sentences:

1. A food chain always starts with herbivores and ends with large carnivores.
(.....)
2. When testing a leaf for starch, if starch is present, the iodine solution will turn red.
(.....)

B. Complete the following sentences:

1. Air with a lot of carbon dioxide is breathed from the nose and mouth.
2. In the desert ecosystem, a jerboa is classified as a because it eats desert shrubs and grass.
3. is an example of an alkaline substance we use daily for cleaning.

4 A. Cross out the odd word and state the reason:

1. Carbon dioxide – 0.04% – Oxygen – Milky limewater

Odd word: Reason:

2. Aluminum – Iron – Steel Wool – Glass

Odd word: Reason:

B. Give a reason for:

1. You feel energetic after eating a healthy meal that passes through the small intestine and liver.
.....
2. The powder left after evaporating acid with dissolved aluminum does not produce bubbles when put back into acid.
.....
3. There is a "circle of life" in the Nile River ecosystem.
.....



1 A. Correct the underlined word in the following sentence:

- The lungs work to collect waste materials from the blood to take them out as urine. (.....)

B. Write the scientific term:

1. It is the process where green plants make their own food (starch) using sunlight and carbon dioxide. (.....)
2. It is a liquid produced in the body, like saliva in the mouth, that has the function of digesting food. (.....)
3. It is a desert carnivore that eats small animals like jerboas. (.....)
4. It is a type of solution, like salt water or sugar water, that does not change the colour of either blue or red litmus paper. (.....)

2 A. Put True (✓) or False (x):

- Blood rich in carbon dioxide returns to the heart, which then sends it to the lungs for gas exchange. ()

B. Give a reason for:

1. Soapy water turns red litmus paper blue, but lemon juice turns blue litmus paper red.
.....
2. Undigested food must pass through the large intestine before being eliminated from the body.
.....
3. Hydrochloric acid is useful when we want to dissolve aluminum.
.....
4. Even if the types of animals differ, food chains in the desert and the Nile River have similar structures.
.....

3 A. Match column (A) with what suits it from column (B):

Column (A)	Column (B)
1. Transpiration	Ⓐ extracts dissolved solid metals from a solution by removing water.
2. Evaporation Technology	Ⓑ changes liquid water inside leaves into water vapor that exits stomata.
	Ⓒ pumps oxygen to the whole body.

①

②

B. Study the following figure (A simple Food Pyramid), then answer:

1. Which layer (A, B, or C) represents the Producers?

2. If this pyramid represents the Nile River, give an example of an organism in the middle layer (B).

3. What would happen to the carnivores in layer C if layer A was completely destroyed by pollution?



4 A. Choose the correct answer:

1. Which statement correctly explains gas exchange in the lungs?

- Ⓐ It takes in carbon dioxide.
- Ⓑ It lets out oxygen.
- Ⓒ It takes in oxygen from the air into the blood.
- Ⓓ It stores nutrients.

2. When testing the function of saliva, we use a starch solution and warm it. What substance do we add to check for the presence of starch?

- Ⓐ Natron
- Ⓑ Iodine solution
- Ⓒ Lemon juice
- Ⓓ Soapy water

B. What happens:

1. When you put the test tube containing starch and saliva in freezing ice water instead of warm water?

2. To the human body if both kidneys stop working?

3. When fish is taken out of the water and placed in dry land?

Model Answers



Model Answer

Evaluate your understanding

Chapter 1

Part 1

1	1. burning / flow 2. used up / goes out 3. stable 4. Gaps
2	1. ✓ 2. ✗ 3. ✓ 4. ✗
3	1. (d) 2. (c)

Part 2

1	1. goes out / prevents 2. supports / brighter 3. Less / greater 4. mixture / gases
2	1. 21% 2. Oxygen gas 3. nitrogen gas 4. prevents
3	1. (c) 2. (b)

Part 3

1	1. milky 2. decreases / increases 3. sensor 4. colour / specific gas
2	1. produced 2. Carbon dioxide 3. colour 4. sensor
3	1. Gas monitor 2. Gas detector

Chapter 2

Part 1

1	1. Limewater / exhaled 2. oxygen / carbon dioxide 3. room 4. Gas detector
---	--

Part 2

1	1. Windpipe 2. gills 3. nose / mouth 4. Heart 5. exhaled
---	--

Chapter 3

Part 1

1	1. anus 2. food pipe 3. stomach 4. mouth
2	1. ✗ 2. ✓ 3. ✗
3	1. (c) 2. (d) 3. (c)

Part 2 and 3

1	1. blue-purple 2. digestive juice 3. blood 4. temperature
2	1. starch 2. water
3	1. Villi 2. Saliva
4	• Anus (The others produce digestive juices.)

Chapter 4

Part 1

1	1. heart 2. Oxygen gas 3. nutrients 4. carbon dioxide gas 5. blood vessels
2	1. Small intestine 2. Blood circulation 3. Heart beats
3	1. (b) 2. (a)

Part 2 and 3

1	1. bladder 2. ribs 3. liver 4. Waste / water / urine
2	1. Blood vessels 2. Molokhia
3	1. Bladder 2. Stomach

Chapter 5

Part 1 and 2

1	1. sunlight 2. blue-black 3. aluminum foil
2	1. Photosynthesis 2. Carbon dioxide
3	1. sunlight 2. day / night
4	1. (d) 2. (b)
5	• Taking on oxygen – The other represent photosynthesis process.

Chapter 6

Part 1 and 2

1	1. Soil / roots 2. Pores / stomata 3. stem
2	1. roots 2. water vapour 3. recovers
3	1. (c) 2. (c)

Chapter 7

Part 1 and 2

1	1. sunlight / photosynthesis 2. water vapor / transpiration 3. carnivores / herbivores
2	1. energy 2. sun
3	1. Lion 2. Snake
4	1. water vapour / rain 2. respiration 3. carbon dioxide / oxygen

Chapter 8

Part 1 and 2

1	1. producers 2. Nile perch 3. Egyptian vulture 4. fossils
2	1. Nile crocodile 2. Fennec fox 3. producers (plants)
3	1. Egyptian vulture 2. Shrub seeds 3. Sunlight

Chapter 9

Part 1,2 and 3

1	1. litmus 2. Evaporates / solid 3. neutral 4. acidic
2	1. alkaline 2. colour
3	1. Salt water 2. Vinegar
4	1. (b) 2. (b)

Chapter 10

Part 1,2 and 3

1	1. evaporate 2. gas bubbles 3. dilute hydrochloric acid
2	1. hydrogen 2. Solid powder
3	1. (c) 2. (d) 3. (c) 4. (b) 5. (b)

Model Answer Main Book

Chapter 1

Conditions for Burning

First PONY Questions

Objective Questions

1. Choose the correct answer:

1. (b) 2. (b) 3. (c) 4. (c)
5. (c) 6. (d) 7. (b) 8. (b)
9. (c) 10. (b) 11. (c) 12. (c)
13. (b) 14. (d) 15. (c) 16. (b)
17. (b)

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	✓	
2	X	A bottom gap makes the flame keep burning, but it is <u>unstable</u> .
3	✓	
4	X	Atmospheric air is a mixture of gases like nitrogen, oxygen, <u>and carbon dioxide</u> .
5	✓	
6	X	The amount of oxygen in air is <u>less</u> than the amount of nitrogen gas.
7	X	The flame <u>goes out immediately</u> when placed in a jar containing carbon dioxide gas.
8	✓	
9	X	You <u>must wear</u> safety goggles so the limewater doesn't get in your eyes.
10	X	A gas detector tube is a <u>single-use</u> glass tube.
11	X	A gas detector tube contains a chemical that reacts with a <u>specific gas</u> .

12	✓	
13	✓	
14	X	Ancient craftspeople used a <u>bellows</u> to pump air into the fire to melt gold.
15	X	Using renewable energy resources from the sun and wind <u>reduces</u> carbon dioxide emissions.

3. Correct the underlined words:

1. stable 2. 78%
3. burns brightly 4. increases
5. milky white
6. gas sampling pump
7. chemical 8. sensor
9. Nile River 10. bellows
11. solar 12. safety goggles

4. Write the scientific term:

1. Atmospheric air (or Air)
2. Nitrogen gas 3. Oxygen gas
4. Carbon dioxide gas
5. Limewater 6. Gas detector tube
7. Gas sampling pump
8. Gas Monitor 9. Bellows
10. Global warming
11. Benban Solar Park

5. Complete the following sentences:

1. in / out 2. used up / goes out
3. mixture
4. oxygen / nitrogen (or carbon dioxide)
5. less / greater 6. upside down / 70
7. milky white / carbon dioxide
8. border 9. oxygen / gold
10. sun / wind / carbon dioxide
11. Benban / solar

6. What's meant by each of the following:

- It is a mixture of different gases such as nitrogen, oxygen, carbon dioxide, and other gases.

7. Mention the importance of:

1. They allow fresh air to flow in and out, so the flame keeps burning and becomes stable.
2. It has the power to help things burn as it supports burning.
3. It is used to check if there is carbon dioxide gas, as it turns milky white when it reacts with it.
4. To prevent limewater from getting in your eyes.
5. It pulls air inside a gas detector tube so the chemical inside the tube can react with the gas.
6. It detects the gas and shows the percentage of the gas on a screen in digital numbers.
7. It is a tool for blowing air, used to pump air into a fire to supply more oxygen to melt gold at high temperatures.
8. It is used to generate electricity without producing any carbon dioxide.

8. Compare between each of the following:

1. A jar covered with a lid (no gaps) and a jar with gaps at both the top and bottom:

Point of Comparison	A jar covered with a lid (no gaps)	A jar with gaps at both the top and bottom
The state of a burning candle inside	The air inside the jar is used up (consumed), and the flame goes out.	Fresh air constantly flows in and out, so the flame keeps burning and is stable (continuous).

2. Oxygen gas and Nitrogen gas:

Point of Comparison	Oxygen gas	Nitrogen gas
Percentage in the air	Makes up about 21% of the atmospheric air.	Makes up about 78% of the atmospheric air.
Behavior with burning	It has the power to help things burn (it supports burning).	It does not help in burning.

3. Oxygen gas and Carbon dioxide gas:

Point of Comparison	Oxygen gas	Carbon dioxide gas
Effect on a lit incense stick	The incense stick burns brightly.	The flame goes out immediately.

4. The Gas Detector Tube and the Gas Monitor:

Point of Comparison	Oxygen gas	Nitrogen gas
Method of measuring gas amounts	Uses a single-use glass tube contains chemical inside it that reacts with a specific gas and changes colour.	Uses a sensor to detect and measure gases.
Method of displaying gas amounts	You read the number at the border where the color changed on the glass tube's scale.	It shows the percentage (%) of the gas on a screen in digital numbers.

9. Give a reason for:

1. Because the fresh air stops coming in, and the air inside the jar is used up.
2. Because fresh air enters from the bottom gap, but it doesn't leave the jar.
3. Because for things to keep burning, fresh air must constantly flow in and out.
4. Because oxygen gas has the power to help things burn as it supports combustion.
5. Because during burning, oxygen gas is used up, and carbon dioxide gas is produced.
6. Because the burning of candle produced carbon dioxide gas, which reacts with the limewater.
7. Because it contains a chemical that reacts with the gas and permanently changes color.
8. To supply more oxygen gas to the fire, this allowed them to melt gold at high temperatures to make beautiful jewelry.
9. To generate electricity without producing any carbon dioxide emissions.

10. What happens:

1. Fresh air is supplied from the surroundings, so the candle keeps burning with stable flame.
2. Fresh air constantly flows in and out, so the flame keeps burning and is stable.
3. The flame goes out immediately.
4. The incense stick burns brightly.
5. The amount of oxygen gas decreases, and the amount of carbon dioxide gas increases.
6. The limewater turns milky white.
7. Air is pulled through the tube and the chemical inside reacts with the gas and changes colour.
8. It changes colour, allowing you to read the percentage of the gas at the border of the color change.
9. It supplies more oxygen gas for burning, so they can melt gold at high temperatures.

11. Study the following figures, and then answer the following questions:

1.
 - (a) The air inside the jar is used up (consumed), and the flame goes out.
 - (b) Because this allows fresh air to flow in and out the jar.
2.
 - (a) A = Nitrogen gas, B = Oxygen gas, C = Carbon dioxide gas
 - (b) Letter B
3.
 - Jar (B), Because oxygen gas supports combustion and makes the candle flame burn brightly.
4.
 - (a) Limewater
 - (b) Carbon dioxide gas

5.
 - (a) Gas detector tube
 - (b) By reading the number at the border where the color changed on the scale.

6.
 - (a) Gas Monitor
 - (b) Yes, there are useful types that can measure oxygen and carbon dioxide at the same time.

7.
 - (a) Bellows
 - (b) Oxygen gas

Second School Book Questions

1. Choose the correct answer:

1. (C) Because fresh air stopped coming in.
2. (b) It burns brightly.
3. (C) The flame goes out.
4. (a) It keeps burning.
5. (b) Oxygen helps other things burn.
6. (C) It turns milky white.

2. Fill in the blanks with the correct words:

1. air
2. cannot

3. Answer the following questions:

1. Once the air inside the jar is used up, the flame will go out.
2. Oxygen gas
3. Limewater
4. The amount of oxygen gas decreases because it is used during burning, and the amount of carbon dioxide gas increases because it is produced during burning.

Chapter 2

Respiration

First Questions of PONY

Objective Questions

1. Choose the correct answer:

- | | | | |
|--------|---------|---------|---------|
| 1. (b) | 2. (b) | 3. (b) | 4. (c) |
| 5. (d) | 6. (a) | 7. (b) | 8. (b) |
| 9. (b) | 10. (c) | 11. (c) | 12. (d) |

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	, the chest gets <u>bigger</u> .
2	✓	
3	✓	
4	X	, <u>oxygen</u> in the air is taken into the blood.
5	✓	
6	X	Inhaled <u>air</u>
7	✓	
8	X	Fish let out carbon dioxide from their <u>gills</u> .
9	✓	
10	X	Clear limewater will turn <u>milky white</u> if you blow breathed-out air into it.
11	X	 called <u>alveoli</u> .

3. Correct the underlined words:

- | | |
|-------------------|------------------|
| 1. Carbon dioxide | 2. smaller |
| 3. gills | 4. windpipe |
| 5. heart | 6. blood vessels |
| 7. blood | 8. heart |

4. Write the scientific term:

- | | |
|----------------------------|------------------|
| 1. Breathing (Respiration) | |
| 2. Limewater | 3. Lungs |
| 4. Windpipe | |
| 5. Gas detector tubes | 6. Blood vessels |

5. Complete the following sentences:

- 21% / 0.04%
- blood vessels / carbon dioxide
- heart
- nose / mouth
- room
- gills / lungs
- carbon dioxide / oxygen
- bigger / smaller

6. Cross out the Odd word, and mention the reason:

1. • Odd Word: Heart

- Reason: The nose, windpipe, and lungs are the hollow path that inhaled air travels through.

2. • Odd Word: Letting out carbon dioxide

- Reason: Breathing in, oxygen entering lungs, and the chest getting bigger are all parts of inhalation.

7. What's meant by:

- The process of taking in oxygen gas (inhalation) and letting out carbon dioxide gas (exhalation).
- The process where oxygen in the air is taken into the blood, and carbon dioxide in the blood is let out into the air.
- Air that enters the body and it contains high percentage of oxygen gas.
- Air that leaves the body and it contains a high percentage of carbon dioxide gas.

8. Mention the importance of:

- It is used to test the presence of carbon dioxide gas in exhaled air inside a plastic bag because its colour turns milky white when exposed to exhaled air.
- They are used to check the percentage of oxygen gas and carbon dioxide gas in a place.

- It is the tube that allows inhaled air to travel to the lungs and exhaled air to leave the body.
- It pumps the oxygen-rich blood to the whole body.
- They surround the alveoli and this is where gas exchange takes place.
- They are the tiny air sacs where the exchange of oxygen and carbon dioxide occurs.
- They are the specific organs fish use to let out carbon dioxide into the water.

9. Compare between each of the following:

- Room air (Inhaled air) and Exhaled air:

Point of Comparison	Room air (Inhaled air)	Exhaled air
Percentage of oxygen and carbon dioxide	Contains about 21% oxygen and 0.04% carbon dioxide.	Contains a very low percentage of oxygen and a high percentage of carbon dioxide.

- The chest during inhalation and the chest during exhalation:

Point of Comparison	The chest during inhalation	The chest during exhalation
Size	The chest gets bigger.	The chest gets smaller.

- Respiration in cats and respiration in fish:

Point of Comparison	Respiration in cats	Respiration in fish
Breathing organs used	Breathe using lungs.	Breathe in and out using gills.

- Limewater mixed with room air and Limewater mixed with exhaled air:

Point of Comparison	Limewater with Room air (Inhaled air)	Limewater with Exhaled air
Colour change	It remains clear (doesn't change).	It turns milky white.

- Oxygen gas and Carbon dioxide gas during gas exchange in the alveoli:

Point of Comparison	Oxygen gas	Carbon dioxide gas
Direction of movement in the alveoli	Is taken into the blood from the air.	Is let out of the blood into the air.

- Oxygen and Carbon dioxide in room air:

Point of Comparison	Oxygen gas	Carbon dioxide gas
Approximate percentages in room air	Makes up about 21% of room air.	Makes up about 0.04% of room air.

10. Give a reason for:

- Because exhaled air contains a high percentage of carbon dioxide gas.
- Because room air contains a very small percentage of carbon dioxide (about 0.04%), which is not enough to change its colour.
- Because the oxygen is carried by the blood and pumped to the whole body by the work of the heart.
- Because inhaled air travels down the windpipe to reach and fill the left and right lungs in our chest.
- Because after the lungs take oxygen into the blood, the heart is needed to carry and pump that oxygen-rich blood to the whole body.

11. What happens when:

- The clear limewater will turn milky white.
- Gas exchange takes place; oxygen is taken into the blood, and carbon dioxide is let out into the air.
- The air travels down the windpipe to reach the left and right lungs, and the chest gets bigger.
- The chest gets smaller, and air rich in carbon dioxide leaves the body from the nose and mouth.

12. Study the following figures, and then answer the following questions:

• **Figure A:**

1. Limewater
2. It will turn milky white because the breathed-out air contains a high percentage of carbon dioxide.

• **Figure B:**

1. Gas sampling pump
2. Gas detector tube
3. It will show a high percentage (because it measures carbon dioxide from exhaled air).

• **Figure C:**

1. Alveoli
2. Oxygen
3. Carbon dioxide

• **Figure D:**

1. Breathing out (Exhalation)
2. Windpipe

• **Figure E:**

1. Lungs
2. Gills

Second School Book Questions

1. Choose the correct answer:

1. a
2. a
3. b
4. b
5. c

2. Answer the following questions:

1. Oxygen gas
2. Lungs

3. Fill in the blanks with the correct words to complete the sentence:

- Through the blood vessels around the lungs, oxygen is taken into the blood, and carbon dioxide in the blood is let out into the air.

Chapter 3

Digestion

First PONY Questions

Objective Questions

1. Choose the correct answer:

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

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	Digestion means breaking down food into small pieces and converting it into a simpler form that can be easily absorbed by the body.
2	✓	
3	X	 with saliva doesn't change when
4	X	The large intestine mainly absorbs <u>water</u> from <u>undigested</u> food.
5	✓	
6	✓	
7	X	, the color doesn't change because the starch is broken down.
8	✓	
9	X	 is carried to the food pipe first, and then to the stomach.

3. Correct the underlined words:

1. digestive
2. blue-purple
3. urine
4. large intestine
5. blood
6. food pipe
7. towel
8. urine
9. intestines

4. Write the scientific term:

1. Digestion
2. Digestive tract
3. Digestive juice
4. Villi
5. Anus
6. Small intestine
7. Liver
8. Large intestine
9. Saliva

5. Complete the following sentences:

1. Stomach / Large intestine
2. liver
3. saliva / water
4. energy
5. towel
6. The liver
7. villi
8. digestion
9. stomach

6. Cross out the Odd word, and mention the reason:

1. • Odd Word: Lungs

- Reason: The mouth, stomach, and small intestine are all parts of the digestive tract.

2. • Odd Word: Blood

- Reason: Saliva, digestive juice of the stomach, and digestive juice of the intestines are liquids that function is to digest food.

3. • Odd Word: Saliva

- Reason: The stomach, small intestine, and large intestine are organs in the digestive tract.

4. • Odd Phrase: Absorbing water from undigested food

- Reason: Because the other three phrases describe the functions of the liver.

7. What's meant by:

1. It is the process of breaking down food into small pieces and converting it into a simpler form that can be easily absorbed by the body.
2. It is the path of food from the mouth to the anus.

3. It is a digestive juice in the mouth that has the function of breaking down starch contained in food into something else.
4. They are small bumps on the inside of the small intestine. They line up closely to make the inner surface area larger so it can absorb nutrients efficiently.
5. It is a liquid that has the function of digesting food.

8. Mention the importance of:

1. It has the function of breaking down starch contained in food into something else.
2. They make the inner surface area of the small intestine larger so it can absorb nutrients and water efficiently.
3. (Choose any two of the following)
 - It converts some nutrients into an easy-to-use form, stores them as energy, and sends them out to the body when needed.
 - It breaks down harmful substances produced in the body so they can be eliminated in urine.
 - It produces a digestive juice that helps break down and absorb fat.
4. It absorbs more water from the undigested food before what is left is eliminated as feces.

9. Compare between each of the following:

1. The small intestine and the large intestine:

Point of Comparison	The Small Intestine	The Large Intestine
What they absorb	It absorbs nutrients from digested food along with water.	It absorbs more water from undigested food.

2. Starch mixed with water and starch mixed with saliva:

Point of Comparison	Starch Mixed with Water	Starch Mixed with Saliva
Color change when dilute iodine solution is added	The color changes into blue-purple.	The color doesn't change (because the starch is broken down).

3. Saliva and the digestive juice produced by the liver:

Point of Comparison	Saliva	Digestive Juice Produced by the Liver
Specific substance they help break down	Helps break down starch contained in food into something else.	Helps break down and absorb fat.

10. Give a reason for:

1. Because the starch is broken down by the function of saliva into simpler substances.
2. Because it is lined up closely with small bumps called villi.
3. To change it into a simpler form that the body can easily absorb.
4. To make the same temperature environment such as inside the human body.
5. To be eliminated from the body in the form of urine.
6. Because the large intestine can absorb water from the undigested food before it is eliminated as feces.

11. What happens:

1. The colour of the mixture changes into blue-purple.
2. The colour doesn't change because the starch is broken down by the saliva into simpler form.
3. They are carried to the whole body by the blood, passing through the liver.
4. Water is absorbed from it, and what is left is eliminated out of the body from the anus as feces.

5. The liver converts some into an easy-to-use form, stores them as energy, and sends them out to the whole body when needed.

12. Study the following figures, and then answer the following questions:

• Figure A:

- (Y)
(Because there is no colour change.)
- Because it contains a mixture of water and starch, and the starch was not broken down.

• Figure B:

- (X) is the Food pipe. (Y) is the large intestine.
- Feces (or stool)
- Water from the undigested food.

• Figure C:

- The small intestine
- Villi

• Figure D:

- To increase the inner surface area to absorb nutrients and water efficiently.
- Blood
- The liver

Second School Book Questions

1. Choose the correct answer:

1. (a) (d) 2. (c) 3. (c)
4. (a) 5. (c) 6. (b)

2. Answer the following questions:

1. Digestion
2. ① Food pipe / ② Stomach / ③ Small Intestine / ④ Large intestine.
3. The digestive tract
4. It did not change.
5. Villi
6. (1) small intestine / (2) blood / (3) liver

Chapter 4

Circulation and Excretion

First PONY Questions

Objective Questions

1. Choose the correct answer:

1. (b) 2. (d) 3. (b) 4. (c)
5. (c) 6. (c) 7. (c) 8. (d)
9. (b) 10. (a) 11. (c) 12. (b)

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	 and <u>returns</u> to the heart again.
2	✓	
3	✓	
4	X	 believed the <u>heart</u> was the "Place of Wisdom",
5	✓	
6	X	, was believed to protect the <u>liver</u> .
7	✓	
8	X	 <u>returns</u> to the heart again.
9	X	The kidneys are located in the lower back on the <u>back side</u> of the body.
10	✓	
11	X	You can also feel your pulse by touching your <u>neck or ankle</u> .
12	✓	

3. Correct the underlined words:

1. lungs 2. red 3. urine
4. Molokhia 5. ankle
6. kidneys 7. lungs 8. nutrients
9. bladder

4. Write the scientific term:

1. Heartbeat 2. Blood vessels
3. Blood Circulation 4. Urine
5. Bladder 6. Pulse
7. Canopic Jars 8. Ribs

5. Complete the following sentences:

1. oxygen gas 2. water
3. ribs 4. intestines
5. lungs 6. liver
7. nutrients/ smoothly 8. carbon dioxide
9. bladder

6. Cross out the Odd word, and mention the reason:

- **Odd Word:** Kidneys
• **Reason:** Lungs, heart, and ribs are all located in the chest, while the kidneys are not.
- **Odd Word:** Heart
• **Reason:** The others represent the heads on Canopic jars used to store organs safely.
- **Odd Word:** Oxygen
• **Reason:** The others represent excretion, while oxygen is not.
- **Odd Word:** Pulse
• **Reason:** Kidneys, bladder, and urine belong to the excretory system, while the pulse isn't.
- **Odd Word:** Bladder
• **Reason:** The heart, blood vessels, and blood all work together in blood circulation, while the bladder is an organ that temporarily stores urine.

7. What's meant by:

- It is the movement of the heart when pumping out the blood.
- They are the flows of the blood through blood vessels that spread all over the body.
- It is the liquid containing waste products that is produced by the kidneys and temporarily stored in the bladder until it is discharged out of the body.

8. Mention the importance of:

1. It works without resting to pump blood throughout the body.
2. They filter the blood from waste products produced in the body and unnecessary things (extra water) to produce urine.
3. They protect the organs in the chest, such as the left and right lungs and the heart.
4. They were used to keep four very important organs safely (the lungs, stomach, liver, and intestines) because ancient Egyptians believed these were important "engines" that supported human life.
5. It is full of nutrients that help keep our blood flowing smoothly, help us digest our food, and keep our body's organs healthy.
6. They act as a network of tubes connecting all organs, allowing blood to circulate throughout the body, carrying nutrients and oxygen, and collecting waste products.
7. It supplies the body with nutrients absorbed from digested food.
8. It keeps the blood inside of the body clean by eliminating waste products and extra water filtered by the kidneys.

9. Compare between each of the following:

1. Blood represented by the red color vs. blood represented by the blue color in diagrams:

Point of Comparison	Red Colored Blood	Blue Colored Blood
Gas Carried	Blood rich in oxygen.	Blood rich in carbon dioxide.

2. Organs in the chest vs. organs in the abdomen:

Point of Comparison	Organs in the Chest	Organs in the Abdomen
Examples of Organs	The left and right lungs, and the heart.	The stomach, small intestine, and large intestine.

3. The Canopic jar with a Baboon head vs. the Canopic jar with a Falcon head:

Point of Comparison	Baboon Head Jar	Falcon Head Jar
Organ Protected	Protected the lungs.	Protected the intestines.

4. The lungs vs. the small intestine:

Point of Comparison	The Lungs	The Small Intestine
Specific Supplies to Blood	Supply the body with oxygen gas.	Supply the body with nutrients.

5. The heart vs. the kidneys:

Point of Comparison	The Heart	The Kidney
Main Function	It pumps the blood throughout the whole body.	It filters the blood from waste products and extra water to become urine.

10. Give a reason for:

1. To send more oxygen and nutrients to the whole body quickly.
2. Because it constantly pumps out blood to deliver oxygen and nutrients from our food to the whole body.
3. To exchange carbon dioxide gas with oxygen gas.
4. Because they believed the heart was the "Place of Wisdom" where the "mind" (or soul) resided.
5. Because our bodies are made from the food we eat, and Molokhia is full of nutrients that help keep our blood flowing smoothly and help us digest our food.

11. What happens:

1. Wastes and extra water are filtered out from the blood to become urine.
2. You can feel your heartbeat through the blood vessels as a pulse.
3. The blood is sent to the lungs to let out carbon dioxide and take in oxygen.
4. They are carried to cells all over our body by the blood, using the pumping power of the heart.

12. Study the following figures, and then answer the following questions:

• Figure A:

- (a) It represents blood rich in carbon dioxide.
- (b) It must be sent to the lungs to let out carbon dioxide and take in oxygen.

• Figure B:

- (a) They are the Kidneys. – They filter out waste products and extra water from the blood.
- (b) It is the Bladder. – It temporarily stores urine until it is discharged out of the body.

• Figure C:

- (a) Canopic Jars
- (b) The lungs

• Figure D:

- (a) They are the Kidneys. – They filter the blood from waste products and extra water.
- (b) Waste products and extra water enter the kidneys, are filtered out from the blood to become urine, pass through the tubes, and are temporarily stored in the Bladder.

• Figure E:

- (a) Molokhia
- (b) It is full of nutrients that help keep our blood flowing smoothly, and it helps us digest our food to keep our body's organs healthy.

Second School Book Questions

1. Choose the correct answer:

1. (a)
2. (b)
3. (b)
4. (c)
5. (c)
6. (b)

2. Fill in the blanks with the correct words to complete the sentence:

1. oxygen – carbon dioxide – lung – carbon dioxide – oxygen
2. the circulation of the blood

3. Choose 2 organs that are inside the chest of the human body:

- Heart – Lungs

4. Choose 2 organs that are inside the chest of the human body:

1. Heart
2. Heartbeats
3. Kidneys
4. Bladder

Chapter 5

Photosynthesis

First PONY Questions

Objective Questions

1. Choose the correct answer:

- | | | | |
|--------|--------|--------|--------|
| 1. (C) | 2. (C) | 3. (b) | 4. (b) |
| 5. (b) | 6. (b) | 7. (C) | 8. (C) |
| 9. (C) | | | |

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	The respiration process in plants occurs during <u>both day and night</u> .
2	✓	
3	X	Placing the leaf into <u>ethanol</u> warmed in hot water removes its green color, while placing it in hot water makes it soft.
4	✓	
5	X	, the percentage of carbon dioxide inside the bag <u>decreases</u> .
6	X	Breathing is also happening during the daytime, but overall the plant takes in more carbon dioxide.
7	X	You must not heat ethanol directly over a flame because it is highly flammable.
8	X	Leaves covered with aluminum foil do not receive sunlight, so <u>no starch</u> is formed and their color remains yellowish-brown.
9	✓	

3. Correct the underlined words:

- | | | |
|--------------------|-------------------|-------------------|
| 1. iodine | 2. energy | 3. carbon dioxide |
| 4. yellowish-brown | 5. sunlight | |
| 6. daytime | 7. carbon dioxide | |

4. Write the scientific term:

- | | |
|--------------------|------------------|
| 1. Photosynthesis | 2. Starch |
| 3. Iodine solution | 4. Oxygen gas |
| 5. Respiration | 6. Aluminum foil |

5. Complete the following sentences:

- | | |
|----------------------------|---------|
| 1. sunlight | 2. soft |
| 3. green | |
| 4. oxygen / carbon dioxide | |
| 5. energy | |

6. Cross out the Odd word, and mention the reason:

1. • The odd word is: Production of starch
• The reason: Because all the other terms describe the respiration process.
2. • The odd word is: Gas detector tube
• The reason: Because the other items are materials used in the experiment to check for starch in leaves.
3. • The odd word is: Releasing energy.
• The reason: Because the other terms describe the photosynthesis process.
4. • The odd word is: Active photosynthesis
• The reason: Because the other terms all describe the breathing (respiration) process.

7. What's meant by:

1. It is the process by which the plant uses sunlight to make its own food.
2. It is the solution that is used to detect the presence of starch in a leaf.
3. It is a biological process where plants take in oxygen and release carbon dioxide in order to release energy.

8. Mention the importance of:

1. Sunlight is necessary for the production of the plant's food (starch) through the photosynthesis process.
2. It is important to remove the green color from the leaf.
3. It is used to check and measure the percentage of oxygen and carbon dioxide inside the bag.
4. It is important because its purpose is releasing energy for the plant.
5. It is important so that they can successfully reach the sunlight they need.

9. Compare between each of the following:

1. Photosynthesis and Respiration in plants:

Point of Comparison	Photosynthesis	Respiration
Purpose of the process	Production of starch	Releasing energy
Gas consumed (taken in)	Carbon dioxide	Oxygen

2. Leaf (A) which was covered with aluminum foil and Leaf (B) which was exposed to sunlight:

Point of Comparison	Leaf (A)	Leaf (B)
Color after the Iodine test	Its color remains yellowish-brown.	Its color turns to blue-black.
Starch presence	No starch is present.	Starch is present.

3. The plant's gas exchange during the daytime and during the nighttime:

Point of Comparison	Leaf (A)	Leaf (B)
Overall gas taken in	Carbon dioxide	Oxygen
Overall gas released	Oxygen	Carbon dioxide

10. Give a reason for:

1. Because they want to reach the sunlight.
2. Because ethanol is highly flammable.
3. Because there is no light at night, so the plant only performs respiration.
4. To remove the green color from the plant leaf.
5. Because plants use sunlight to make their food, so the photosynthesis process is very active.

11. What happens when:

1. Its color will remain yellowish-brown because no starch was formed.
2. The percentage of oxygen will become higher (increase) and the percentage of carbon dioxide will become lower (decrease).
3. The leaf will become soft.
4. Starch is produced to help the plant grow healthy.
5. The green color is removed from the leaf.

12. Study the following figures, and then answer the following questions:

• Figure A:

- a) It will turn blue-black, which indicates that starch is present.
- b) Its color will remain yellowish-brown because it was covered with aluminum foil and did not receive sunlight, so no starch was formed.

• **Figure B:**

- (a) Carbon dioxide gas has a higher percentage.
- (b) The tubes will show a higher percentage (increase) in oxygen and a lower percentage (decrease) in carbon dioxide.

• **Figure C:**

- (a) No, the plant does not stop taking in oxygen. Breathing is also happening during the daytime, but overall the plant takes in more carbon dioxide because photosynthesis is very active.
- (b) The arrows will completely switch places. The plant will take in oxygen and release carbon dioxide because there is no light and the plant only breathes.

Second School Book Questions

1. Choose the correct answer:

- 1. (b)
- 2. (a)
- 3. (a)
- 4. (a)
- 5. (b)

2. Answer the following questions:

- 1. Starch
- 2. We cover the leaves from the day before the experiment so that sunlight does not hit them and leaves don't form starch.
- 3. The colour of iodine solution doesn't change, because no starch is formed.
- 4. High percentage of carbon dioxide gas.

Chapter 6

Transportation of Water in Plants

First PONY Questions

Objective Questions

1. Choose the correct answer:

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

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	✓	
2	X	Water first reaches the <u>stem</u> before it passes to the leaves.
3	X	Water droplets formed inside the plastic bag covering the plant with leaves (Plant while no droplets formed for the plant without leaves (Plant B).
4	✓	
5	✓	
6	✓	
7	X	Stomata are mostly found on the <u>underside</u> of the leaves.
8	X	The papyrus plant grows <u>many meters tall</u> .
9	X	Transpiration works to <u>lower the</u> temperature around the plant.
10	✓	

3. Correct the underlined words:

- 1. roots 2. stomata 3. transpiration
- 4. water vapor 5. recovers
- 6. roots, stems, and leaves
- 7. stomata 8. carbon dioxide
- 9. transpiration 10. paper

4. Write the scientific term:

1. Transpiration
2. Stomata
3. Stem
4. Starch
5. Leaves
6. Photosynthesis
7. Papyrus
8. Strong, straight water paths
9. Oxygen gas
10. Transpiration

5. Complete the following sentences:

1. soil / roots
2. stem
3. paths
4. air purifier
5. roots/ stems/ leaves
6. Stomata/ underside
7. sprinkler / temperature
8. large / flat

6. Cross Out the odd word, and mention the reason:

1. • **Odd Word:** Stomata
• **Reason:** Because the other parts make up the main path for water transportation.
2. • **Odd Word:** Red colored water
• **Reason:** Because the other is related to the process of photosynthesis.
3. • **Odd Word:** Red colored paths
• **Reason:** Because the other is related to the process of transpiration.
4. • **Odd Word:** Make paper
• **Reason:** Because the other is related to how a plant cools the air through transpiration process.

7. What's meant by:

1. It is the process in which water inside the plant changes into water vapor and is released into the air from the leaves.
2. They are small pores mostly found on the underside of the leaves that act as exits for water vapor to leave the plant.

8. Mention the importance of:

1. It transports water from the roots to the leaves.
2. They act as exits that allow excess water vapor to go out into the air during transpiration.

3. It helps the plant catch as much of Egypt's strong sunlight as possible so they can produce nutrients (starch) efficiently like solar panels.
4. It lowers the temperature around the plant, acting like a natural sprinkler to cool the air for us.
5. It was used to make paper.

9. Compare between each of the following:

1. Plant A and Plant B in the transpiration experiment:

Point of Comparison	Plant A (with leaves)	Plant B (without leaves)
Results observed inside the plastic bags	Water droplets are formed inside the plastic bag.	No water droplets formed inside the plastic bag.

2. Function of the roots and leaves:

Point of Comparison	Roots	Leaves
Function regarding plant survival	Absorb water from the soil.	Make the plant food through photosynthesis and act as an exit for excess water (transpiration).

3. Photosynthesis and transpiration:

Point of Comparison	Photosynthesis	Transpiration
Substances a plant releases into the surrounding air	Releases oxygen.	Releases excess water in the form of water vapor.

10. Give a reason for:

1. Because it helps plants make their own food.
2. Because the plant loses excess water in the form of water vapor from the leaves through transpiration, which gets trapped and turns into droplets on the inside of plastic bag.
3. Because the water spreads to the whole body of the plant through the paths in the roots, stems, and leaves.
4. To remove any soil before doing the experiment.

5. Because plants act like a natural sprinkler during transpiration process that works to lower the temperature around the plant.
6. Because during photosynthesis, plants take in the carbon dioxide that humans breathe out and release oxygen gas into the air, acting as a natural air purifier.
7. Because inside its stem, there are strong, straight water paths that carry the water directly to the top.

11. What happens when:

1. No water droplets will form inside the plastic bag because transpiration happens mainly through the leaves.
2. The colour of the water path inside plant turns to red.
3. They take in the carbon dioxide that humans breathe out and release oxygen, acting as a natural air purifier to keep the air clean.
4. The plant will not be able to release water vapor into the air, meaning very little transpiration will occur.
5. The temperature is lowered. The plant acts like a natural sprinkler to cool the air.
6. They carry the water all the way to the top of the plant at once.

12. Study the following figures, and then answer the following questions:

Figure 1:

- (a) The purpose of using colored water is to observe the path of water inside the plant by making it visible.
- (b) If you cut the stem, you will observe that the parts that turned red are the paths for the colored water.

Figure 2:

- (a) You will observe water droplets forming inside the plastic bag of plant A (the plant with leaves).
- (b) The biological process being tested is Transpiration.

Figure 3:

- (a) The exact order of water transportation is: Roots → Stems → Leaves.
- (b) The tiny pore is called stomata. They are mostly located on the underside of the leaves.
- (c) The blue arrows show water being carried to the leaves. Once there, the plant gets rid of excess water, which changes into vapor and escapes through the stomata. The escaping vapor represents the transpiration process.

Figure 4:

- (a) The name of the plant shown is the lotus (water lily).
- (b) The large and flat shape helps the leaves act like solar panels to catch as much strong sunlight as possible to produce nutrients (starch) efficiently.

Figure 5:

- (a) In ancient times, this specific plant was used to make paper.
- (b) The straight tubes inside the stem act as strong, straight water paths that carry the water absorbed by the roots all the way to the top at once.

Second School Book Questions

1. Choose the correct answer:

1. (b) 2. (c) 3. (b)

2. Answer the following questions:

1. Transpiration process
2. It recovers after a while.
3. Stomata
4. We must water the base of plant until it starts to recover.
5. Roots → Stem → Leaves

Chapter 7

Food Chain

First PONY Questions

Objective Questions

1. Choose the correct answer:

1. (c) 2. (b) 3. (b) 4. (d)
5. (c) 6. (b) 7. (b) 8. (c)
9. (b) 10. (c) 11. (b)

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	The food chain starts with <u>plants (producers)</u> .
2	✓	
3	✓	
4	✓	
5	X	Humans are classified as <u>omnivores</u> because they can eat both plants and animals.
6	✓	
7	✓	
8	X	Plants use the <u>carbon dioxide</u> breathed out by animals to perform photosynthesis.
9	X	Living organisms, air, and water are <u>connected by invisible bonds</u> .
10	✓	

3. Correct the underlined words:

1. photosynthesis 2. food chain
3. carnivores 4. carbon dioxide
5. water vapor 6. energy
7. oxygen 8. circulating

4. Write the scientific term:

1. Food chain 2. Producers (Plants)
3. Herbivores 4. Carnivores
5. Transpiration 6. Omnivore
7. Water vapor 8. Rain

5. Complete the following sentences:

1. plants / carnivores 2. energy
3. invisible 4. rain
5. Herbivores/ carnivores
6. increase / decrease
7. transpiration/ water vapour
8. carbon dioxide/ oxygen

6. Cross out the Odd word, and mention the reason:

1. • Odd word: Frog
• Reason: The rest are herbivores (eat plants).
2. • Odd word: Rabbit
• Reason: The rest are producers (plants) that use sunlight to make food.
3. • Odd word: Rabbit
• Reason: The rest are carnivores.

7. What's meant by:

1. It is the "eat and be eaten" connection (feeding relationship) between living organisms in an ecosystem.
2. They are animals that eat plants (Examples: Grasshoppers, rabbits).
3. They are animals that eat other animals (Examples: Snakes, eagles, lions).
4. It is a living organism (like plants) that uses sunlight to produce nutrients inside their bodies. This is the beginning of the food chain.

8. Mention the importance of:

1. Plants use sunlight to produce nutrients inside their leaves through photosynthesis.
2. Animals use the oxygen gas released by plants to breathe.
3. Plants use the carbon dioxide breathed out by animals for photosynthesis.
4. It shows to the direction of energy between living organisms in the food chain.
5. They act as the beginning of the food chain, use sunlight to produce food, and release oxygen that animals need to breathe.

9. Compare between each of the following:

1. Herbivores and Carnivores:

Point of Comparison	Herbivores	Carnivores
Type of food	They are animals that eat plants.	They are animals that eat other animals.
Examples	Grasshoppers and rabbits	Snakes, eagles, lions, and frogs

2. The connection of living organisms through air:

Point of Comparison	Plants (through air)	Animals (through air)
What they release	Release oxygen gas.	Breathe out carbon dioxide gas.
What they use	They use the carbon dioxide breathed out by animals for photosynthesis.	They use the oxygen released by plants to breathe.

3. Producers (Plants) and Omnivores:

Point of Comparison	Producers (Plants)	Omnivores
How they obtain energy	They use sunlight to produce nutrients inside their bodies.	They eat both plants and animals.
Examples	Grass, algae, wheat, and trees	Human

4. Transpiration and Rain:

Point of Comparison	Producers (Plants)	Omnivores
The direction of water movement	Water moves up from the plant's roots and is released into the air.	Water falls down from the clouds back to the ground.

10. Give a reason for:

- Because they can eat both plants and animals.
- Because they use sunlight to produce nutrients inside their leaves through photosynthesis.
- Because living organisms need to get energy from food to grow and survive.
- Because the water on Earth is changing its shape and circulating.
- Because our lives are constantly supported by the oxygen produced and released by plants.

11. What happens when:

- The number of grasshoppers will increase, and the number of snakes will decrease.
- The amount of oxygen gas will decrease, and the amount of carbon dioxide gas will increase.
- The amount of water vapor in the atmosphere will decrease, leading to less rain formation.
- It changes its shape and circulates, allowing it to fall back to the ground as rain and be used repeatedly.
- They get the energy they need to grow and survive.

12. Study the following figures, and then answer the following questions:

• **Figure A:**

- (a) Grass
- (b) Frog
- (c) The direction of energy

• **Figure B:**

- (a) Oxygen gas
- (b) Carbon dioxide gas

• **Figure C:**

- (a) Transpiration
- (b) It falls back to the ground as rain.

• **Figure D:**

- (a) Transpiration / Water vapor
- (b) Oxygen gas
- (c) Carbon dioxide gas
- (d) Rain
- (e) Photosynthesis

13. Form a food chain by arranging the following living organisms in the correct order:

1. (Grass) → (Grasshopper) → (Frog) → (Snake)
2. (Wheat) → (Grasshopper) → (Frog) → (Eagle)
3. (Leaf) → (Earthworm) → (Bird)
4. (Tree) → (Giraffe) → (Lion)
5. (Grass) → (Rabbit) → (Fox)
6. (Producer) → (Herbivore) → (Carnivore)

Second School Book Questions

1. Choose the correct answer:

1. (c)
2. (b)
3. (c)
4. (b)
5. (b)

2. Answer the following questions:

1. Food chain
2. Wheat → Grasshopper → Frog → Eagle

Chapter 8

Food Chains in Egypt

First Questions PONY

Objective Questions

1. Choose the correct answer:

1. (b) 2. (c) 3. (d) 4. (c)
5. (c) 6. (b) 7. (d) 8. (c)

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	✓	
2	X	The bottom of the food pyramid is always supported by plants (producers).
3	X	Egypt has completely different food chains in aquatic environments and arid areas.
4	✓	
5	✓	
6	✓	
7	✓	

3. Correct the underlined words:

1. Nile crocodile 2. plants (or producers)
3. Fennec fox
(or Egyptian vulture / Desert Horned Viper)
4. fossils 5. different
6. consumers 7. ocean

4. Write the scientific term:

1. Food pyramid 2. Plants (or Producers)
3. Fossils 4. Wadi al-Hitan

5. Complete the following sentences:

1. plants (or producers)
2. Nile perch 3. Egyptian vulture
4. fossils 5. Nile tilapia
6. plants (or producers)

6. Cross out the Odd word, and mention the reason:

1. • **Odd Word:** Egyptian vulture
• **Reason:** The others belong to the Nile River (aquatic) food chain.
2. • **Odd Word:** Sunlight
• **Reason:** The others are plants (producers).
3. • **Odd Word:** Algae
• **Reason:** The others are animals in the desert food chain.
4. • **Odd Word:** Jerboa
• **Reason:** The others are producers (plants) from the Nile River environment.

7. What's meant by:

1. The diagram of a food chain where living organisms are connected by an "eat and be eaten" relationship.
2. Plants that always support the very bottom of the food pyramid by producing their own food using sunlight.

8. Mention the importance of:

1. It is used by plants (producers) to make their own food, which supports the very bottom of the entire food pyramid.
2. It allows us to see that tens of millions of years ago, the ancient ocean had a complete food chain, showing that the connection of life remains unbroken from the past to the future.
3. They support the very bottom of the food pyramid because they are the only ones that produce their own food from sunlight.

9. Compare between each of the following:

- The food chain in the Nile River and the food chain in the desert:

Point of Comparison	The food chain in the Nile River	The food chain in the desert
Examples of a Producer	Algae and water plants (or papyrus)	Desert shrubs and grass (or shrub seeds)
Examples of a Top Carnivore	Nile crocodile	Egyptian vulture (or fennec fox)

10. Give a reason for:

1. Because plants (producers) are the ones that can produce their own food from sunlight.
2. Because the desert is now filled with fossils from when it used to be an ancient ocean tens of millions years ago.
3. Because without consumers like the fennec fox, the balance of the desert ecosystem would be disrupted.

11. What happens when:

1. If the plants die, the herbivores (like jerboas) will have no food. Because of this, the carnivores (like fennec foxes and vultures) will lose their food source and will also not be able to survive, disrupting the food chain.
2. In the Nile River, fish like the Nile tilapia eat the small shrimp. If the shrimp disappear, the Nile tilapia will lose its main source of food.
3. Plants (producers) will not be able to produce their own food, meaning the bottom of the pyramid will fail to support the rest of the food chain.

12. Study the following figures, and then answer the following questions:

• **Food Pyramid figure**

- Ⓐ Sunlight Ⓑ Plants (or Producers)

13. Study the Following Figures, Then Answer the Following Questions

1. Organism (X) is Nile Perch.
2. Organism (Y) is Papyrus.
3. The base of the pyramid (producer) is Shrub Seeds.

Second School Book Questions

1. Choose the correct answer:

- Ⓑ

2. Answer the following questions:

1. Nile crocodile
2. Carnivores will not find food, as the number of herbivores decreases.
3. Jerboa

Chapter 9

Properties of Solutions

First Questions of PONY

Objective Questions

1. Choose the correct answer:

- | | | | |
|--------|---------|---------|---------|
| 1. (C) | 2. (C) | 3. (C) | 4. (b) |
| 5. (C) | 6. (b) | 7. (C) | 8. (C) |
| 9. (b) | 10. (C) | 11. (a) | 12. (C) |

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	Acidic solutions turn blue litmus paper red.
2	X	, nothing will remain in the dish.
N	✓	
4	X	Scientists monitor wastewater to ensure it is <u>not</u> strongly acidic or alkaline.
5	✓	
6	✓	
7	✓	
8	X	, it is classified as an alkaline solution.
9	✓	

3. Correct the underlined words:

- solution
- Sparkling water
(or Dilute ammonia solution)
- red
- natron
- nothing will remain
- neutral
- soapy water (or limewater, ammonia solution, baking soda solution)
- desert salt lakes

4. Write the scientific term:

- | | |
|------------------------|-----------------|
| 1. Neutral solution | 2. Natron |
| 3. Evaporation process | 4. Litmus paper |

- | | |
|----------------------|------------|
| 5. Acidic solution | 6. Pipette |
| 7. Wastewater | |
| 8. Alkaline solution | |

5. Complete the following sentences:

- | | |
|-------------------|---------------|
| 1. alkaline | 2. goggles |
| 3. solid | 4. wastewater |
| 5. carbon dioxide | 6. red |
| 7. alkaline | 8. wastewater |
| 9. gas | 10. water |
| 11. pipette | |

6. Cross out the Odd word, and mention the reason:

- **Odd Word:** Sugar water
• **Reason:** The rest are acidic solutions.
- **Odd Word:** Sparkling water
• **Reason:** The rest contain solids dissolved in water.
- **Odd Word:** Vinegar
• **Reason:** The rest are alkaline solutions.
- **Odd Word:** Baking soda solution
• **Reason:** The rest contain dissolved gases that escape into the air.
- **Odd Word:** Dilute hydrochloric acid
• **Reason:** The rest are neutral solutions.
- **Odd Word:** Natron
• **Reason:** The rest are laboratory equipment tools.

7. What's meant by:

- It is a solution that does not change the color of either red or blue litmus paper.
- It is a solution that turns blue litmus paper red.
- It is a solution that turns red litmus paper blue.
- It is a strongly alkaline white powder found in desert salt lakes that Ancient Egyptians used to absorb water from the body to make mummies.
- It is an acidic solution that has carbon dioxide gas dissolved in water.

8. Mention the importance of:

1. It is used to identify the type of solution (whether it is acidic, neutral, or alkaline) by observing its color change.
2. It was essential for creating mummies that kept their shape for thousands of years because it had a powerful ability to absorb water from the body.
3. It helps us identify and find out what was dissolved inside a solution (a solid or a gas).
4. It allows farmers to adjust the soil to the perfect condition for plants like cotton and wheat, to ensure a large harvest of crops.
5. To ensure the water is not strongly acidic or alkaline, protecting the Nile River environment so fish and birds can live safely.
6. It is an acidic solution used for cooking.
7. It is an alkaline solution used for cleaning.
8. It is used to carefully, add one drop of the test solution onto both the red and blue litmus strips.

9. Compare between each of the following:

1. Acidic solutions and Alkaline solutions:

Point of Comparison	Acidic solutions	Alkaline solutions
Effect on litmus paper	Turns blue litmus paper red.	Turns red litmus paper blue.
Examples	Lemon juice (or vinegar, hydrochloric acid)	Soapy water (or limewater, ammonia solution)

2. Heating salt water and heating carbonated water:

Point of Comparison	Heating salt water	Heating carbonated water
What remains in the evaporating dish	A white solid substance (salt) will remain at the bottom.	Nothing will remain because the dissolved gas escapes into the air.

3. Dilute hydrochloric acid and Baking soda solution:

Point of Comparison	Dilute hydrochloric acid	Baking soda solution
Effect on litmus paper	Turns blue litmus paper red.	Turns red litmus paper blue.
What remains after heating	No solid is left (gas escapes).	A white solid remains.

4. Lemon juice and Soapy water:

Point of Comparison	Lemon juice	Soapy water
Solution classification	Acidic solution	Alkaline solution
Everyday uses	Used for cooking	Used for cleaning

10. Give a reason for:

1. Because natron is strongly alkaline and has a powerful ability to absorb water from the body, helping mummies keep their shape for thousands of years.
2. Because carbonated water has carbon dioxide gas dissolved in it. When heated, the gas escapes into the air.
3. To ensure the water is not strongly acidic or alkaline, in order to protect the environment where fish and birds can live safely.
4. Because they are both classified as acidic solutions.
5. Because they are both classified as neutral solutions.
6. To adjust the soil to the perfect condition for plants like cotton and wheat, cleverly ensuring a large harvest of delicious crops.

11. What happens if:

1. The blue litmus paper will turn red because it is an acidic solution.
2. The salt will disappear and form a solution (salt water).
3. A white solid substance will remain at the bottom of the dish because it contains a solid dissolved in water.
4. It will not change the color of either litmus paper because distilled water is a neutral solution.

5. The natron powerfully absorbed water from the body, allowing the mummies to keep their shape for thousands of years.
6. Nothing will remain in the dish because the ammonia solution contains a dissolved gas that escapes into the air.
12. Study the following figures, and then answer the following questions:

• **Figure A:**

- (a) An acidic solution (Because the blue litmus paper turned red.)
- (b) Lemon juice (or vinegar, dilute hydrochloric acid, carbonated water)

• **Figure B:**

- (a) A gas dissolved in water.
- (b) Sparkling water / Carbonated water (or dilute hydrochloric acid, dilute ammonia solution)

• **Figure C:**

- (a) To adjust the soil to the perfect condition for the plants they grow (like cotton and wheat), to ensure a large harvest.
- (b) The scientist is monitoring factory wastewater. They ensure it is not strongly acidic or alkaline to protect the beautiful environment so fish and birds can live safely in the Nile River.

• **Figure D:**

- (a) Natron
- (b) It has a powerful ability to absorb water from the body.

Second School Book Questions

1. Choose the correct answer:

1. (a) 2. (b) 3. (c)
4. (b) 5. (b)

2. Answer the following questions:

1. • Salt water • Sugar water
• Distilled water
2. • Lemon juice • Vinegar
• Hydrochloric acid
3. Carbon dioxide in water

Chapter 10

Reaction Between Solutions and Metals

First PONY Questions

Objective Questions

1. Choose the correct answer:

1. (b) 2. (c) 3. (c) 4. (b)
5. (b) 6. (c) 7. (c)

2. Put (✓) or (X), with correction if needed:

Number	Answer	Correction
1	X	Aluminum <u>does not</u> react with water
2	X	 is <u>not shiny</u>
3	✓	
4	✓	
5	✓	
6	✓	
7	X	 between aluminum and <u>sparkling water</u>
8	X	The solid remaining <u>is not shiny; it changes into a dry, dull white powder.</u>
9	X	 is completely <u>useful</u>
10	✓	
11	✓	

3. Correct the underlined words:

1. hydrogen 2. a white solid powder
3. few 4. still a little liquid left
5. chemical 6. not shiny (or dull)
7. stable 8. reduce

4. Write the scientific term:

1. Hydrogen gas
2. Dry white powder (or white solid)
3. Evaporation
4. Chemical energy
5. Carbon dioxide
6. Strong reaction
7. Water
8. Safety goggles

5. Complete the following sentences:

1. dilute hydrochloric acid / water
2. properties
3. chemistry
4. hydrogen
5. strong
6. running water
7. white solid
8. chemical
9. green / rich
10. safety goggles

6. Cross out the Odd word, and mention the reason:

1. • **Odd word:** Gold
• **Reason:** Gold does not react with or dissolve in strong solutions, while aluminum and iron dissolve in acid.
2. • **Odd word:** Water
• **Reason:** The rest dissolve metals and produces bubbles.
3. • **Odd word:** Dry white powder
• **Reason:** The rest are properties of the original metal.
4. • **Odd word:** Carbon dioxide
• **Reason:** The rest are all observations of the reaction when metals mix with hydrochloric acid.
5. • **Odd word:** White solid powder
• **Reason:** The rest are properties of the original metal.
6. • **Odd word:** Chemical energy
• **Reason:** The rest are types of aqueous solutions tested with litmus paper.
7. • **Odd word:** Touch the remaining solid directly
• **Reason:** The rest are mandatory safety rules.

7. What's meant by:

1. It means instead of throwing away old metal items, we can use the power of chemistry to extract hidden parts and turn them back into clean materials, which reduces trash and makes the future green.

2. It means gold does not react with or dissolve in strong solutions like hydrochloric acid, which allows it to remain beautiful and shine forever.
3. It means the metal dissolves quickly in the solution and produces many bubbles.
4. It means the metal dissolves slowly in the solution and produces only a few bubbles.

8. Mention the importance of:

1. It has the property to dissolve metals like aluminum and iron, triggering a reaction that produces hydrogen gas bubbles.
2. It allows the remaining heat to safely dry the liquid, which protects you from burns and prevents you from breathing in harmful fumes directly.
3. Because of this property, gold does not react with or dissolve in strong solutions, allowing artifacts to stay beautiful and shine for thousands of years.
4. It allows us to recover hidden parts and turn old metals back into clean materials, which reduces trash and makes Egypt's future green and rich.
5. Safety goggles protect your eyes from splashes, while ventilating the room prevents you from directly breathing in the hydrogen gas and fumes produced by the chemical reaction.
6. It is used to extract the solid from the liquid, allowing factories to make very pure materials.

9. Compare between each of the following:

1. The reaction of Aluminum and Iron when placed in dilute hydrochloric acid:

Point of Comparison	Aluminum	Iron
Speed of dissolving	Dissolves quickly	Dissolves slowly
Amount of bubbles	Many bubbles	Few bubbles
Type of reaction	Strong reaction	Weak reaction

2. The original aluminum metal and the remaining solid after evaporation:

Point of Comparison	Dilute hydrochloric acid	Remaining solid after evaporation
Appearance	Shiny and solid metal	Not shiny (Dull) dry white powder
Reaction with hydrochloric acid	Dissolves and produces bubbles.	It doesn't dissolve and produces no bubbles.

3. Dilute hydrochloric acid and water regarding their effect when poured on pieces of aluminum:

Point of Comparison	Dilute hydrochloric acid	Water
Effect on Aluminum	Dissolves the metal quickly and produces many bubbles.	Metal does not dissolve and no bubbles are produced.
Reaction	Strong reaction	No reaction

4. Gold and Aluminum regarding their stability and how they react when placed in a strong solution like hydrochloric acid:

Point of Comparison	Gold	Aluminum
Stability	Extremely stable property	Changes into a completely new substance.
Reaction in strong solution	Does not react with or dissolve.	Dissolves quickly and produces bubbles.

5. "Strong reaction" and a "Weak reaction" based on the results of the experiment involving metals and dilute hydrochloric acid:

Point of Comparison	Strong reaction	Weak reaction
Metal used in experiment	Aluminum	Iron (Steel wool)
Observation	Dissolves quickly and produces many bubbles.	Dissolves slowly and produces few bubbles.

10. Give a reason for:

1. Because gold has an extremely stable property, meaning it does not react with or dissolve in strong solutions like hydrochloric acid.
2. Because the acid can splash and the reaction creates a new gas (hydrogen); safety goggles protect your eyes, and ventilation ensures you do not breathe in the fumes.
3. Because water is an aqueous solution that does not have the property to dissolve metals like aluminum and iron.
4. Because a large amount of chemical energy is at work during the reaction to create a new gas, which is hydrogen gas.
5. To extract the solid from the solution in order to make very pure materials.
6. Because it teaches us that dissolved metals are still hidden inside the liquid and can be extracted using chemistry to turn them back into clean materials, which reduces trash and makes Egypt's future green and rich.

11. What happens:

1. The metal will not dissolve, no gas bubbles will be produced, and there will be no reaction.
2. The liquid will evaporate and reveal a white solid powder. The original metal has changed into a new substance with completely different properties.
3. It will not dissolve and will not produce bubbles like the original metal did.
4. It will not react with or dissolve in the solution because gold has an extremely stable property.
5. A strong reaction will occur; the aluminum will dissolve quickly, and many bubbles of hydrogen gas will be produced.
6. Nothing changes. The metals will not dissolve, no bubbles will form, and there will be no reaction.
7. The original hidden parts are extracted, turning the old items back into clean materials, which reduces trash and saves resources.
8. The liquid will evaporate, leaving behind a dry white solid powder, showing a completely metal change into a different substance.

12. Study the following figures, and then answer the following questions:

• **Figure A:**

- (a) Dilute hydrochloric acid
- (b) Hydrogen gas

• **Figure B:**

- (a) You must turn off the heat while there is still a little liquid left, and let the remaining heat dry it. Do not touch heated items directly or breathe in fumes.
- (b) A dry, white solid powder

• **Figure C:**

- (a) Dilute hydrochloric acid
- (b) Water
- (c) Hydrogen gas

• **Figure D:**

- (a) Gold has an extremely stable property and does not react with or dissolve in strong solutions like hydrochloric acid.
- (b) To extract the solid from the solution in order to make very pure materials.
- (c) By using the power of chemistry, we can extract these hidden parts to turn old, discarded metal items back into clean, reusable materials, which greatly reduces trash.

Second

School Book Questions

1. Choose the correct answer:

- 1. (b)
- 2. (b)
- 3. (b)

2. Answer the following questions:

- 1. Metal will react with acid producing hydrogen gas bubbles.
- 2. The solid white powder has different properties than that of original metal.
- 3. The solid white powder will not dissolve and produce bubbles like the original metal.

Model Answer

Exams on Chapters

Exam on Chapter 1

1 A. Study the following figure:

1. Bellows
2. Fresh air (Oxygen gas)
3. To pump extra fresh air into their fires to make them burn brighter when melting gold.

B. What happens when:

1. The flame goes out immediately because fresh air stops coming in.
2. It burns very brightly because oxygen has the power to help things burn.

2 A. Cross out the Odd word and state the reason:

- Odd word: Coal
- Reason: Coal is a non-renewable fuel, while the sun, wind, and water are renewable sources.

B. Write the scientific term:

1. Limewater
2. Gas Monitor

C. What's meant by:

- It is a mixture of gases containing nitrogen (about 78%), oxygen (about 21%), carbon dioxide (about 0.04%) and other gases.

D. Put (✓) or (X):

- (X)

3 A. Choose the correct answer:

1. ©
2. Ⓓ

B. Give a reason for:

1. Because fresh air needs to flow both in and out continuously for a stable burn.

2. To protect your eyes safely during the experiment.

3. To use the sun's renewable energy to produce clean electricity instead of burning fuels that produce carbon dioxide.

4 A. Correct the underlined word:

1. 78%
2. Chemical indicator

B. Complete the following sentences:

1. in / out
2. fat / oils

- C. The amount of oxygen decreases (it is used up), and the amount of carbon dioxide increases (it is newly produced).

Exam on Chapter 2

1 A. Choose the correct answer:

- Carbon dioxide

B. Complete the following sentences:

1. blood vessels / oxygen / carbon dioxide
2. 21% / 0.04%
3. bigger (increases) / smaller (decreases)
4. gills

2 A. Correct the underlined word:

1. carbon dioxide
2. heart

B. Give a reason for:

1. Because exhaled air contains carbon dioxide, which reacts with the limewater.
2. Because after the lungs take in oxygen, the heart must pump that oxygen-rich blood to the whole body.
3. Because the lungs are filling up with air.

3 A. Put (✓) or (X):

- (X)

B. Write the scientific term:

1. Windpipe
2. Alveoli

- C.** • It is the vital biological process of taking in oxygen and releasing carbon dioxide to release energy for the body.

4 A. Cross out the Odd word and state the reason:

1. • **Odd word:** Heart

- **Reason:** The heart belongs to the circulatory system, while the rest are organs of the respiratory system.

2. • **Odd word:** Letting out carbon dioxide

- **Reason:** The other represent inhalation process.

B. What happens when:

1. Gas exchange takes place; oxygen is taken into the blood, and carbon dioxide is let out.
2. Air rich in carbon dioxide gas travels from your right and left lungs, goes through the windpipe, and is released from your nose and mouth.

C. Mention the importance of:

- It is the tube that allows inhaled air to travel to the lungs and exhaled air to leave the body.

Exam on

Chapter 3

1 A. Study the following figure:

1. Villi / They are lined up closely inside the small intestine.
2. They absorb digested nutrients directly into the blood.

B. What happens when:

1. The colour changes to blue-purple.

2. It would not absorb nutrients well.

3. The large intestine absorbs water from what is left of the food before eliminating it.

2 A. Put (✓) or (X):

1. (X)
2. (X)

B. Complete the following sentences:

1. anus
2. small intestine
3. energy

3 A. Correct the underlined word:

1. urine
2. blue-purple

B. Write the scientific term:

1. Small intestine
2. Digestive tract
3. Saliva

4 A. Choose the correct answer:

- Fat

B. Cross out the Odd word and state the reason:

1. • **Odd word:** Food pipe

- **Reason:** The mouth, stomach, and small intestine are organs that produce digestive juices.

2. • **Odd word:** Liver

- **Reason:** The liver is a supporting organ that produces juices, while the others are the actual tube the food passes through.

C. Give a reason for:

1. To create the exact same temperature environment as the inside of the human body for saliva to work.
2. Because the liver converts nutrients into an easy-to-use form, stores them as energy, and breaks down harmful substances.

Exam on Chapter 4

1 A. Choose the correct answer:

- © Lungs → Heart → Blood → Whole body

B. Put (✓) or (X):

- (X)

C. Give a reason for:

1. To send more oxygen and nutrients to the whole body quickly.
2. To let out the collected carbon dioxide and take in oxygen.

D. Study the following figure and then answer:

1. Stomach
2. Intestines

2 A. Correct the underlined word:

1. ankle
2. small intestine

B. Write the scientific term:

1. Heartbeat
2. Urine

C. Complete the following sentences:

- oxygen / nutrients

3 A. Cross out the Odd word and state the reason:

- **Odd word:** Carbon dioxide
- **Reason:** Oxygen gas, nutrients, and red blood are being carried to the whole body's cells.

B. Compare between:

P.O.C	Red Colored Blood (in diagrams)	Blue Colored Blood (in diagrams)
Gases & Materials Carried	Rich in Oxygen and Nutrients being pumped to the whole body.	Rich in Carbon dioxide and waste returning to the heart to be removed.

C. What happens when:

1. The kidneys filter the blood, take out waste products and extra water, and produce urine.
2. You will feel your pulse beating much faster because your heart is working harder.

D. What is meant by:

- It is the continuous movement of blood pumped by the heart to deliver oxygen and nutrients to the body and remove waste.

4 A. Match column A with column B:

- | | |
|-------|-------|
| ① → d | ② → e |
| ③ → b | ④ → a |

B. Mention the importance of:

- It carries life-saving oxygen and nutrients to the entire body and takes away harmful waste like carbon dioxide.

Exam on Chapter 5

1 A. Cross out the Odd word and state the reason:

- **Odd word:** Production of starch
- **Reason:** Producing starch is part of Photosynthesis, while the other three facts describe respiration.

B. Complete the following sentences:

1. starch
2. green

C. Mention the importance of:

1. Used to measure the exact percentages of oxygen and carbon dioxide gases.
2. It provides the energy required for plants to produce their own nutrients (starch).

2 A. Correct the underlined word:

- oxygen

B. Write the scientific term:

1. Ethanol
2. Respiration

C. Compare between:

Point of Comparison	Photosynthesis	Respiration
Purpose of the process	To produce nutrients (starch) for the plant.	To release energy for the plant to survive.
Gas consumed (taken in)	Carbon dioxide	Oxygen

3 A. Choose the correct answer:

- © Starch

B. Put (✓) or (X):

- (X)

C. Give a reason for:

1. Because it needs sunlight as an energy source to perform photosynthesis.
2. To catch as much strong sunlight as possible efficiently.

D. Study the following figure (Plant in a plastic bag):

- **Oxygen:** Will decrease (because the plant is still breathing it in).
- **Carbon dioxide:** Will increase (because the plant breathes it out but cannot use it for photosynthesis without fresh air/light).

4 A. Match column A with column B:

- ① → © ② → a

B. What happens:

1. Oxygen increases and carbon dioxide decreases (due to photosynthesis).
2. The leaf turns blue-purple, proving starch was made.

C. What's meant by:

- The process where plants produce their own nutrients using sunlight, taking in carbon dioxide and releasing oxygen.

Exam on Chapter 6

1 A. Cross out the Odd word and state the reason:

- **Odd word:** Stomata
- **Reason:** Roots, stems, and leaves are the path water travels through.

B. Complete the following sentences:

1. Roots/ stem
2. air purifier / carbon dioxide

C. Study the following figure:

- a Lotus (Water lily)
- b Helps it float and catch strong sunlight to efficiently produce nutrients.

2 A. Match column A with column B:

- ① → © ② → b
- ③ → d ④ → a

B. Write the scientific term:

1. Transpiration
2. Starch

C. Compare between each of the following:

P.O.C	Roots	Leaves
Function	Absorb water and nutrients from the soil	Produce food (starch) using sunlight and perform transpiration to cool the plant.

3 A. Choose the correct answer:

1. © Roots → Stem → Leaves
2. © Papyrus

B. Give a reason for:

1. Because the roots absorb the water and transport it up through the stem to the leaves.
2. Because of transpiration, where plants release water vapor through their leaves, acting like a natural cooling sprinkler.

C. Mention the importance of:

- To easily visualize and prove the internal paths water takes as it travels up the stem.

4 A. Correct the underlined word:

1. water vapor
2. soil

B. What happens when:

1. No water droplets will form because transpiration mostly happens through the leaves (stomata).
2. They clean the air by absorbing carbon dioxide and releasing fresh oxygen.
3. The plant cannot perform transpiration to cool down, and it cannot take in carbon dioxide to make food.

Exam on

Chapter 7

1 A. Match column A with Column B:

- ① → b ② → d ③ → a

B. Complete the following sentences:

1. eat and be eaten (or feeding)
2. producers / carnivores

C. Mention the importance of:

1. Provides the energy to produce their own nutrients, supporting the entire food chain.
2. Shows the direction that energy flows from the eaten to the eater.

2 A. Correct the underlined word:

- omnivore

B. Write the scientific term:

1. Food chain
2. Carnivore

C. Compare between each of the following:

P.O.C	Herbivores	Carnivores
Two Examples	Grasshoppers, Rabbits	Eagles, Lions

3 A. Choose the correct answer:

1. b
2. b

B. Give a reason for:

1. Because they can make their own food using sunlight.
2. Because plants constantly release fresh oxygen into the air during photosynthesis.

C. Study the following components:

1. Grass → Grasshopper → Frog → Snake
2. The grasshopper population increases, and the snake population decreases.

4 A. Cross out the Odd word and state the reason:

1. • Odd word: Rabbit
• Reason: The rabbit is an animal (herbivore), while the rest are plants (producers).
2. • Odd word: Rabbit
• Reason: The rabbit only eats plants (herbivore), while the others eat meat (carnivores).

B. What happens when:

1. Oxygen decreases, carbon dioxide increases.
2. The environment around the plants becomes much hotter because the natural cooling effect is gone.

C. What is meant by producers?

- They are organisms at the beginning of the food chain, like plants, that make their own food using sunlight.

Exam on Chapter 8

1 A. Cross out the Odd word and state the reason:

- Odd word: Egyptian vulture
- Reason: It belongs to the desert food chain, while the others belong to the aquatic Nile River food chain.

B. Complete the following sentences:

1. producers
2. Nile tilapia

C. Mention the importance of:

1. It provides the light energy for plants to grow.
2. Acts as a carnivore that sustains the balance of the desert ecosystem.

2 A. Match column A with column B:

① → ⑥

② → ③

B. Write the scientific term:

1. Food pyramid
2. Fossils

C. Compare between:

Point of Comparison	Nile River Food Chain	Desert Food Chain
Example of a Producer	Water plants / Algae	Desert shrub / Grass
Example of a Top Carnivore	Crocodile	Fennec fox / Egyptian vulture

3 A. Put (✓) or (X):

1. (X)
2. (X)

B. Give a reason for:

1. Because they can make their own food from sunlight.
2. Because they are herbivores that eat the plants directly.

C. Study the following figure:

- Algae → Nile Tilapia → Nile Perch → Nile Crocodile
- Nile Crocodile

4 A. Correct the underlined word:

1. Egyptian vulture
2. Fennec fox / Egyptian vulture
3. ends

B. What happens to:

1. Herbivores starve and die, breaking the food chain, causing the carnivores to die out as well.
2. The Nile tilapia lose a food source and their numbers decrease.

Exam on Chapter 9

1 A. Match Column A with Column B:

① → ③

② → ④

③ → ⑤

B. Complete the following sentences:

1. carbonated / carbon dioxide
2. goggles

C. Mention the importance of:

1. Used as a natural powder to absorb water and make mummies.
2. Used as a "Chemical Eye" to test if a solution is acidic or alkaline.

2 A. Cross out the Odd word and state the reason:

- Odd word: Sugar water
- Reason: It is a neutral solution, while all the others are acidic.

B. Write the scientific term:

1. Evaporation
2. Neutral solution

C. Compare between (Using a Table):

Point of Comparison	Lemon Juice	Soapy Water
Type of Solution	Acidic Solution	Alkaline Solution
Everyday Uses	Used in food and cooking	Used for washing and cleaning

3 A. Choose the correct answer:

1. (b) 2. (a)

B. Give a reason for:

- To ensure the water is safe (not dangerously acidic/alkaline) before entering the Nile.
- To make sure soil conditions are absolutely perfect for growing crops.
- Because it remains extremely hot and causes severe burns.

4 A. Correct the underlined word:

1. glass rod 2. solution

B. What happens when:

- The paper turns blue because baking soda is an alkaline solution.
- You must use your hand to safely waft the smell toward you.

C. What's meant by:

- It is a solution that turns red litmus paper blue, such as soapy water or baking soda solution.

Exam on Chapter 10

1 A. Put (✓) or (X):

- (X)

B. Complete the following sentences:

1. chemical 2. acidic

C. Mention the importance of the following:

- It is used to separate and extract pure solid metals from solutions for recycling.
- It is a vital safety rule to let the remaining heat safely dry the liquid without dangerous splattering.

2 A. Cross out the Odd word and state the reason:

- Odd word: Gold
- Reason: Gold has an extremely stable property and does not dissolve in acid, while Aluminum and Iron dissolve and produce bubbles.

B. Write the scientific term:

1. Hydrogen gas 2. Stable property

C. Compare between the following :

P.O.C	Aluminum placed in dilute hydrochloric acid	Iron placed in dilute hydrochloric acid
Amount of bubbles produced	Large amount of bubbles	Few amount of bubbles

3 A. Choose the correct answer:

1. (b) 2. (b)

B. Give a reason for the following:

- Because gold has an extremely stable property as it does not react with or dissolve in strong solutions like hydrochloric acid.
- Because water is neutral and doesn't has the acidic power required to dissolve metals.

C. What is meant by:

- It means the metal dissolves slowly in the solution and produces only a few bubbles (like iron in hydrochloric acid).

4 A. Match column A with column B:

- ① → (b) ② → (a)

B. Mention one example for each:

- A pipette 2. Hydrogen
- Its shiny, metallic appearance

Model Answer

Pony Final Exam

Model Exam

1

1 A. Choose the correct answer:

- (b) Liver

B. Write the scientific term:

1. Nitrogen
2. Villi
3. Transpiration
4. Producers

2 A. Put (✓) or (X):

- (X)

B. Give a reason for:

1. Because the gas produced when things burn is carbon dioxide, and limewater has the property of turning milky white when it reacts with carbon dioxide.
2. To break down the food into smaller pieces and change it into a form that is easy to absorb into the body (digestion).
3. Because they act as a filter for the blood, extracting waste products and extra water to produce urine.
4. Because Natron is a strongly alkaline powder that had a powerful ability to absorb water from the body, helping mummies keep their shape.

3 A. Match column (A) with what suits it from column (B):

1. The Heart: (a) Works like a pump to send blood to the whole body.
2. Blood: (b) Carries oxygen and nutrients to the whole body.

B. What happens when:

1. The metal dissolves and produces bubbles.
2. It will fail to produce food (starch) because sunlight is blocked, and plants need sunlight for photosynthesis.
3. The paths inside the stems and leaves will turn red, showing the routes used to carry water.

4 A. Correct the underlined word in the following sentences:

1. gills
2. carbon dioxide

B. Compare between the following:

1. The gas exchange of a plant at 12:00 PM (Noon) versus 12:00 AM (Midnight):

P.O.C	12:00 PM (Noon)	12:00 AM (Midnight)
Gas exchange	Photosynthesis: Takes in Carbon dioxide and releases Oxygen.	Respiration: Takes in Oxygen and releases Carbon dioxide.

2. The desert food chain and the Nile River food chain regarding example of one producer:

P.O.C	Desert Food Chain	Nile River Food Chain
Example of one Producer	Desert shrubs and grass	Algae and water plants

3. Lemon juice and baking soda solution regarding to the type of solution:

P.O.C	Lemon Juice	Baking Soda Solution
Type of solution	Acidic solution	Alkaline solution

1 A. Cross out the odd word and state the reason:

- **Odd word:** Kidneys
- **Reason:** The kidneys are the only organs located on the back side of the body (in the lower back). Others are all arranged in the front of the body.

B. Complete the following sentences:

1. Consumers 2. nutrients
3. Large intestine 4. solid metals

2 A. Correct the underlined word in the following sentence:

- liver

B. Mention the importance (function) of each of the following:

1. A liquid that begins breaking down food (like starch) during digestion.
2. Works like a pump to send blood constantly to the whole body.
3. Serve as paths to transport the water absorbed by the roots up to the leaves.
4. It is the gas in the air that has the power to help other things burn.

3 A. Put (✓) or (X):

1. (X) 2. (✓)

B. Write the scientific term:

1. Digestion 2. Windpipe
3. Food pyramid

4 A. Choose the correct answer:

1. Ⓓ Small intestine 2. Ⓒ Acidic

B. Give a reason for:

1. Because they use sunlight to produce nutrients (food) inside their bodies to feed the rest of the chain.
2. To change it into a form that is easy to absorb into the body.
3. Because the water is absorbed by the roots and spreads through the stems to the whole body of the plant.

1 A. Correct the underlined word in the following sentence:

- Carbon dioxide

B. What is meant by:

1. It is a scientific tool, like Litmus paper, used to see invisible properties to check if a solution is acidic or alkaline.
2. It is the breaking down food with teeth and juices, changing it into a form that is easy to absorb.
3. It is the "eat and be eaten" connection (feeding relationship) between living organisms.
4. It is the process where the lungs take in oxygen from the air into the blood, and let out carbon dioxide from the blood into the air.

2 A. Choose the correct answer:

- Ⓒ Liver

B. What happens when:

1. The herbivores will increase too much and eat all the plants, destroying the balance of the ecosystem.
2. The water evaporates, and a dry white solid (powder) appears, recovering the metal.
3. They take in oxygen and release carbon dioxide, just like animals.

4. The fire will burn much brighter because you are supplying it with more fresh oxygen.

3 A. Match column (A) with what suits it from column (B):

1. Heart: ⑥ pumps blood to carry oxygen and nutrients to the whole body.
2. Kidneys: ⑦ collects unnecessary waste and water to form urine.

B. Compare between the following:

1. The leaves of the lotus (water lily) and desert plants:

P.O.C	Lotus (Water lily)	Desert plants
Shape of leaves and purpose	Flat and large shape to float and catch strong sunlight to efficiently produce nutrients.	(Usually small or thorny to save water and survive dry environments).

2. Blood returning from the body and blood pumped from the lungs regarding oxygen content:

P.O.C	Blood from the body	Blood from the lungs
Oxygen Content	Low oxygen (Rich in Carbon dioxide).	High oxygen (Rich in Oxygen).

- ### 3. Jerboas and Algae regarding their role in their food chains:

P.O.C	Jerboas	Algae
Role in food chain	Herbivores (eat desert plants).	Producers (make their own food in the Nile).

4 A. Put (✓) or (X):

1. (X) 2. (X)

B. Complete the following sentences:

1. carbon dioxide 2. towel
3. recycle

Model Exam

4

1 A. Put (✓) or (X):

- (✓)

B. Write the scientific term:

1. Digestion 2. Oxygen
3. The Nile River 4. Water

2 A. Cross out the odd word and state the reason:

- **Odd word:** Nile crocodile
- **Reason:** The Nile crocodile is a carnivore, while algae, water plants, and desert shrubs are all producers (plants).

B. Give a reason for:

1. Because sunlight allowed the leaf to produce starch, and iodine turns blue-black when starch is present.
2. Because it has strong, straight internal water paths in its stems.
3. Because fresh air (oxygen) must constantly flow in and out for things to keep burning stably.
4. Because it acts as a chemical indicator to easily test whether a solution is acidic, neutral, or alkaline based on color changes.

3 A. Choose the correct answer:

1. (a) Oxygen 2. (b) Alkaline

B. Mention the importance of each of the following:

1. They eat the plants and pass that energy up the food chain to the carnivores.
2. They absorb water from the soil to be transported through the stems to the leaves.
3. It transports life-saving oxygen and nutrients to every cell in the body.

4 A. Correct the underlined word in the following sentences:

1. food pipe 2. alveoli

B. Study the following figure, then answer:

1. Transpiration 2. Stomata
3. There is no water droplets appear inside the bag

Model Exam 5

1 A. Correct the underlined word in the following sentence:

- lungs

B. Complete the following sentences:

1. stomach 2. urine
3. algae 4. lemon

2 A. Put (✓) or (X):

1. (X) 2. (X)

B. What happens when:

1. The plant will die because the roots have no water to absorb and transport.
2. The color will quickly change to dark blue-black/ blue-purple.
3. The large intestine will absorb water from what is left of the food before it exits the body.

3 A. Choose the correct answer:

- (b) Starch

B. Write the scientific term:

1. Litmus paper 2. Oxygen
3. Photosynthesis 4. Liver

4 A. Match column (A) with what suits it from column (B):

- 1. Stomach: (c) receives food from the food pipe to mix with digestive juices.
- 2. Anus: (b) is an opening which feces leave the body through.

B. Give a reason for:

1. Because they used them as fuel for fires to light up the dark temples.
2. Because our bodies use up oxygen (so it decreases) and produce carbon dioxide (so it increases).
3. Because it is the King/ Top Carnivore that eats other animals (like fish) and is not eaten by anything else.

Model Exam 6

1 A. Put (✓) or (X):

- (X)

B. Mention the importance of each of the following:

1. Humans need it to breathe and stay alive, and it is the gas that has the power to help fire burn.
2. It provides the energy required for plants to perform photosynthesis and produce their own food (starch).
3. They act as a natural air purifier by taking in carbon dioxide and releasing fresh oxygen.
4. It has the chemical property needed to react with and dissolve strong metals like aluminum and iron.

2 A. Choose the correct answer:

1. (c) Carbon dioxide 2. (c) Blood

B. Complete the following sentences:

1. small intestine
2. litmus paper
3. pyramid

3 A. Correct the underlined word in the following sentence:

- evaporating

B. Compare between the following:

1. The heart and the lungs regarding their main function:

P.O.C	Heart	Lungs
Main function	Works as a pump to send blood to the whole body.	Performs gas exchange (takes in oxygen, lets out carbon dioxide).

2. Villi and alveoli regarding function of each:

P.O.C	Villi	Alveoli
Function	Absorbs digested nutrients into the blood.	Absorbs oxygen into the blood from inhaled air.

3. Desert shrubs and fennec foxes regarding how they get their food:

P.O.C	Desert Shrubs	Fennec foxes
Way to get food	Producers: Make their own food using sunlight.	Carnivores: Hunt and eat other animals (like jerboas).

4. Oxygen and Carbon dioxide regarding their movement during human respiration:

P.O.C	Oxygen	Carbon dioxide
Movement	Moves from the air into the blood.	Moves from the blood out into the air.

4 A. Cross out the odd word and state the reason:

1. • **Odd word:** Nile Tilapia
• **Reason:** It belongs to the aquatic Nile River food chain, while the others belong to the dry desert food chain.
2. • **Odd word:** Soapy water
• **Reason:** It is an alkaline solution, while the others are acidic solutions.

B. Write the scientific term:

1. Kidneys
2. Herbivores
3. Atmospheric air

Model Exam**7****1 A. Choose the correct answer:**

- © the color does not change because the starch was broken down.

B. Give a reason for:

1. For safety, allowing the remaining heat to dry the liquid without causing dangerous splattering.
2. Because it is full of waste (carbon dioxide) that needs to be exchanged for fresh oxygen in the lungs.
3. So you can easily identify and tell leaves A, B, and C apart during the experiment.
4. Because they clean our blood by filtering out harmful waste products and extra water as urine.

2 A. Correct the underlined word in the following sentences:

1. herbivores
2. oxygen

B. Write the scientific term:

1. Food pipe
2. Bellows
3. Urine

3 A. Put (✓) or (X):

- (X)

B. What happens when:

1. The color does not change because salt water is a neutral solution.
2. Your pulse beats faster and you breathe heavier to quickly get rid of the carbon dioxide and bring in fresh oxygen.
3. The flame will go out immediately.
4. The acid will react with the metal, the iron will dissolve, and it will produce a lot of bubbles.

4 A. Match column (A) with what suits it from column (B):

1. Windpipe: (c) is the tube through which air reaches the two lungs.
2. Mouth: (b) is the first organ in the digestive tract.

B. Mention the importance of each of the following:

1. It absorbs water from the undigested food left over before eliminating it as waste.
2. It allows plants to use sunlight to produce the nutrients (starch) they need to survive.
3. It is a clear liquid used to check for the presence of carbon dioxide, turning milky white when carbon dioxide is added.

1 A. Cross out the odd word and state the reason:

- **Odd word:** Nile tilapia
- **Reason:** The Nile tilapia belongs to the Nile River food chain, while grasshoppers, jerboas, and fennec foxes belong to the desert food chain.

B. Complete the following sentences:

1. oxygen
2. gas detector
3. transpiration
4. atmospheric air

2 A. Put (✓) or (X):

1. (✓)
2. (✓)

B. Give a reason for:

1. Because it breaks down harmful substances produced in the body so they can be safely eliminated.
2. Because oxygen is the specific gas that has the powerful property of helping things burn.
3. Because animals cannot produce their own nutrients using sunlight; they must rely on plants (producers).

3 A. Correct the underlined word in the following sentence:

- carbon dioxide

B. Write the scientific term:

1. Lungs
2. Lemon juice / Vinegar
3. Herbivores
4. Recycling

4 A. Choose the correct answer:

1. (c) Colored water
2. (c) In the abdomen, at the top

B. Compare between the following:

1. Algae and the Nile Crocodile regarding their position in the food chain:

P.O.C	Algae	Nile Crocodile
Position in the food chain	At the base (Producers)	At the top (King Carnivore)

2. The small intestine and the large intestine regarding their main absorption role:

P.O.C	Small intestine	Large intestine
Main absorption role	Absorbs digested nutrients.	Absorbs water from remaining waste.

3. Respiration in humans and photosynthesis in plants regarding oxygen gas direction:

P.O.C	Respiration	Photosynthesis
Oxygen gas direction	Taken in from the air to the blood.	Released out from the plant to the air.

Model Exam 9**1 A. Choose the correct answer:**

- © It allows us to recycle old materials, reducing trash and making the economy greener.

B. What is meant by:

1. It is the continuous path of food traveling from the mouth to the anus.
2. It is the process of respiration where the body takes in oxygen and releases carbon dioxide.
3. They are the tiny pores on a leaf that release water vapor during transpiration.
4. It is a digital sensor used in experiments to check the exact percentages of gases like oxygen and carbon dioxide.

2 A. Put (✓) or (X):

- (✓)

B. Mention the importance of each of the following:

1. It is the essential energy source that plants must use to produce their food (starch).
2. It provides the clear tube path for inhaled air to reach the lungs.
3. It allows humans and animals to breathe and live, and it helps fires to burn.
4. They act as the site of gas exchange, allowing oxygen into the blood and carbon dioxide out.

3 A. Correct the underlined word in the following sentences:

1. producers (plants)
2. blue-purple

B. Complete the following sentences:

1. out
2. herbivore
3. Soapy water

4 A. Cross out the odd word and state the reason:

1. • Odd word: Oxygen

• Reason: Oxygen does not belong to this group because 0.04% is the percentage of carbon dioxide in the air, and carbon dioxide is the gas that turns limewater milky.

2. • Odd word: Glass

• Reason: Glass is not a metal; aluminum, iron, and steel wool are all metals that dissolve and produce bubbles in acid.

B. Give a reason for:

1. Because the small intestine absorbs the nutrients, and the liver converts them into a form that is stored and sent out as energy.
2. Because the metal chemically reacted and changed into a completely new substance with different properties.
3. Because living organisms are deeply connected through feeding relationships (the food chain) where smaller creatures are eaten by larger ones, creating balance.

Model Exam

10

1 A. Correct the underlined word in the following sentence:

- kidneys

B. Write the scientific term:

1. Photosynthesis
2. Digestive juice
3. Fennec fox / Egyptian Vulture
4. Neutral solution

2 A. Put (✓) or (X):

- (✓)

3 A. Match column (A) with what suits it from column (B):

1. Transpiration: ⑥ changes liquid water inside leaves into water vapor that exits stomata.
2. Evaporation Technology:
① extracts dissolved solid metals from a solution by removing water.

B. Study the following figure (A Simple Food Pyramid), then answer:

1. Layer A (The broad base of the pyramid)
2. Herbivorous fish (like the Nile tilapia) or small shrimp
3. The herbivores in layer B would starve. Once layer B dies out, the carnivores in layer C will lose their food source and die out as well.

B. Give a reason for:

1. Because soapy water is an alkaline solution, while lemon juice is an acidic solution.
2. So the large intestine can absorb any remaining water from the waste.
3. Because it has the acidic properties needed to react strongly with metals like aluminum and iron, dissolving them.
4. Because every food chain on Earth must always begin with plants (producers) and end with large carnivores.

4 A. Choose the correct answer:

1. ③ It takes in oxygen from the air into the blood.
2. ② Iodine solution

B. What happens:

1. The saliva will not digest the starch properly because it needs to be at body temperature (around 40 degrees Celsius) to work.
2. Harmful waste products and extra water will build up in the blood instead of being filtered out as urine, which is extremely dangerous.
3. It cannot breathe and will die because fish use gills to take in oxygen directly from the water, not from the air.

NOTES

NOTES

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Primary
First Term

By Ahmed Omara



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سيد محمد مصطفى
أحمد مصطفى



0 721688 316800 >

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