



Prep 1 Science



Vision & Objectives of the Revision

تهدف المراجعة إلى تطوير ثلاث مهارات أساسية لدى الطالب، وهي:

1. تنمية الثروة اللغوية العلمية:

التي تؤثر في كفاءة الطالب عند الاجابه علي أسئلة مثل

Complete •

scientific term •

give reasons •

وغيره من الأسئلة •

من خلال الجزء الخاص بأهم كلمات المنهج في بداية المراجعته - يجب حفظها جيداً

2. مراجعة شاملة ومركزة للمنهج:

يتضمن الجزء الثاني من المراجعة ملخصاً شاملاً يغطي جميع جوانب المنهج، بالإضافة إلى

كبسولة التعريفات وأسئلة (Give Reasons – What Happens if...)، مما يساعد

الطالب على استرجاع كل جزئية بسهولة.

3. التدريب على جميع أنواع الأسئلة وطريقة حلها:

ترتيب الأسئلة في المراجعة تدريجياً من الأسهل إلى الأصعب، مع ربط الأسئلة المتشابهة

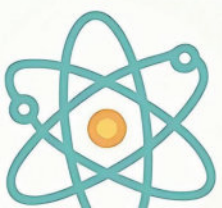
في المعلومات تبعاً لأستكمال استحضار المنهج في ذهن الطالب بنظام، وتشجيع الطالب

على الاستمرار في الحل دون الشعور بالإحباط عند مواجهة الأسئلة الصعبة.

تم إعداد هذه المراجعة بعناية ومحبة، إيماناً بأن كل طالب قادر على التميز إذا أُعطي الفرصة والدعم المناسب. اجتهد، ثق بنفسك، وابدأ طريق التفوق بثبات.

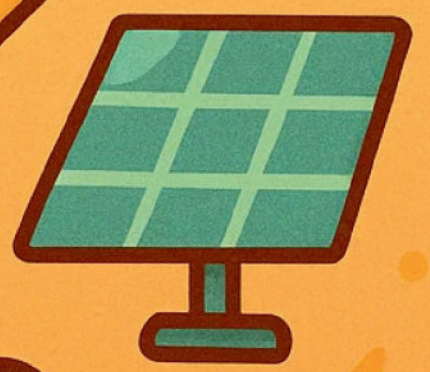
مع خالص تمنياتي بالنجاح

Mr. Salah Khalil





Full Summary





تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

The most important words

The word	المعنى
Minerals	المعادن
Rocks	صخور
Sedimentary rocks	صخور رسوبية
Igneous rocks	صخور نارية
Metamorphic rocks	صخور متحولة
Weathering	التجوية
Erosion	التعرية
Fossils	حفريات
Crystallization	التبلور
Melting	الانصهار
Fossil fuels	الوقود الحفري
Coal	الفحم
Petroleum oil	البتترول
Natural gas	الغاز الطبيعي
Earth's crust	القشرة الأرضية
Earth's interior	باطن الأرض
Sediments	الرسوبيات
Deposition	الترسيب
Gravel	حصى
Clay	طين
Minerals	المعادن
Compacted	منضغطة
Cemented	متماسكة
Porous	مسامية
Bone fractures	كسور العظام
Water flow	جريان الماء
Wind blowing	عصف الرياح
Hot springs	الينابيع الحارة
Infiltration	التسرب
Desalination	تحلية المياه
Water cycle	دورة الماء
Evaporation	التبخّر
Condensation	التكاثف
Precipitation	الهطول
Surface runoff	الجريان السطحي
Conservation	الحفاظ على

The word	المعنى
Sustainability	استدامة
Sanitation	الصيانة
Hygiene	النظافة
Regulation	تنظيم
Genetic traits	صفات وراثية
Acquired traits	صفات مكتسبة
Instinct	الغريزة
Inherited	موروث
Offspring	النسل
Reproduction	التكاثر
Nucleic acid	حمض نووي
Double helix	اللولب المزدوج
Mutation	الطفرات
Spontaneous mutation	طفرة تلقائية
Induced mutation	طفرة مستحدثة
Agricultural technique	تقنية زراعية
Dairy products	منتجات ألبان
Energy pyramid	هرم الطاقة
Producers	كائنات منتجة
Consumers	كائنات مستهلكة
Decomposers	كائنات محللة
Herbivores	حيوانات عاشبة
Carnivores	حيوانات لاحمة
Omnivores	حيوانات قارئة
Food chains	السلاسل الغذائية
Food webs	الشبكات الغذائية
Energy flow	سريان الطاقة
Nutritional relationships	علاقات غذائية
Competition	التنافس
Mutualism	تبادل المنفعة
Commensalism	المعايشة
Host	المضيف
Ecosystem	النظام البيئي
Abiotic components	مكونات غير حية
Biotic populations	جماعات حيوية
Kinetic energy	طاقة الحركة
Mechanical energy	الطاقة الميكانيكية

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Force	القوة
Work	الشغل
Speed	السرعة
Distance	مسافة
Displacement	إزاحة
Inclined rays	أشعة مائلة
Vertical rays	أشعة عمودية
Device	جهاز
Density	كثافة
Salinity	ملوحة
Chemical indicators	أدلة كيميائية
Concentrated	مركز

Baking soda	بيكربونات الصوديوم
Potential of hydrogen (pH)	الرقم الهيدروجيني
Acid rains	الأمطار الحمضية
Metal	الفلزات
Nonmetals	اللافلزات
Crystal lattice	الشبكة البلورية
Extracting	استخراج
Industrial uses	الاستخدامات الصناعية
Pesticides	مبيدات حشرية
Biological control	المكافحة البيولوجية
Sustainable agriculture	الزراعة المستدامة
Ecological balance	التوازن البيئي

MR.SALAH
prime



افتح عقلك
قبل فمك

Full summary

Metals	Nonmetals
Outer energy level ends with 1, 2, or 3 electrons.	Ends with 5, 6, or 7 electrons (except H=1, C=4).
All are solids except Mercury (liquid).	Solid or gas except Bromine (liquid).
Shiny (metallic luster).	Dull (no luster).
Malleable, ductile, and formable.	Brittle, not malleable or ductile.
Good thermal conductors.	Poor thermal conductors.
Good electrical conductors.	Poor electrical conductors (except graphite).
High melting points.	Low melting points.
Examples: Sodium, Copper, Zinc, Silver, Iron	Examples: Carbon, Sulphur, Phosphorus, Bromine, Iodine

NOTES

- **Hammering Sulphur** → It crumbles due to being brittle (nonmetal).
- **Copper** → Easily shaped as it is malleable and ductile (metal).
- **Graphite in dry cells** → Used because it is a good electrical conductor (despite being a nonmetal).

Electrical Circuit

- The bulb lights up if connected **to a good electrical conductor**.
- **Zinc, Graphite, Silver:** good conductors → bulb lights up.
- **Phosphorus:** bad conductor → bulb does not light up.

Alloys

- **Alloy** = a mixture of two or more melted metals (not a compound).
- Properties **differ** from pure metals (ex: harder, resistant to rust).
- **Example: Bronze** → Copper (95%) + Tin (5%)
 - **Properties:** Harder than copper, does not rust.
 - **Uses:** Statues, medals, jewelry.

Metallic Bond

- **Metals** have a crystal lattice of cations surrounded by a sea of free electrons.
- **This creates metallic bonds:** attraction between +ve ions and -ve electron cloud.
- **More valence electrons = stronger bond, harder metal, higher melting point.**

Metal	Valence Electrons	Melting Point
Sodium (Na)	1	98°C
Magnesium (Mg)	2	650°C
Aluminum (Al)	3	660°C

Metal Recycling

- **Reasons for recycling metals** (Copper, Aluminum, Iron):
 1. Decreasing abundance in Earth's crust.
 2. Difficulty of extraction from ores.
 3. Lower cost of recycling vs. extraction.
- **Recycling** : is the conversion of waste into new usable substances.

Ions and Atomic Groups

Types of Ions

- Cation (positive ion):** From a metal (ex: Na^+ , Mg^{2+}).
- Anion (negative ion):** From a nonmetal (ex: Cl^- , O^{2-}).

Naming Rule

- All nonmetallic anions end with “-ide”.
- H^+ is the only positive ion from a nonmetal.

Atomic Group (Polyatomic Ion)

- Composed of more than one atom of more than one element.
- Can be positively or negatively charged.

Common Atomic Groups and Their Charges

Atomic Group	Formula	Charge
Hydroxide	OH^-	-1
Nitrate	NO_3^-	-1
Nitrite	NO_2^-	-1
Bicarbonate	HCO_3^-	-1
Chlorite	ClO_2^-	-1
Ammonium	NH_4^+	+1
Carbonate	CO_3^{2-}	-2
Sulphate	SO_4^{2-}	-2
Sulphite	SO_3^{2-}	-2
Phosphate	PO_4^{3-}	-3

- Ammonium** : is the only positively charged atomic group.

Acids and Alkalis

Arrhenius Definition

- Acid:** Produces H^+ ions in water.
- Alkali:** Produces OH^- ions in water.

Naming Acids

Acids without Oxygen

- Start with “hydro-” + name of anion (ending in -ide)
- Change “-ide” to “-ic”

Example: $\text{HCl} \rightarrow$ Hydrochloric acid

Acids with Oxygen (Oxyacids)

- If anion ends in -ate \rightarrow acid ends in -ic
- If anion ends in -ite \rightarrow acid ends in -ous

Example: $\text{NO}_3^- \rightarrow$ Nitric acid (HNO_3)

Example: $\text{SO}_3^{2-} \rightarrow$ Sulphurous acid (H_2SO_3)

Writing Molecular Formulas of Acids

- Formula = H^+ + Anion
- The number of H^+ = charge on anion
- Total charge = 0**

Examples:

- $\text{H}^+ + \text{Br}^- \rightarrow \text{HBr}$ (Hydrobromic acid)
- $2 \text{H}^+ + \text{SO}_3^{2-} \rightarrow \text{H}_2\text{SO}_3$ (Sulphurous acid)
- $3 \text{H}^+ + \text{PO}_4^{3-} \rightarrow \text{H}_3\text{PO}_4$ (Phosphoric acid)

Writing Molecular Formulas of Alkalis

- Formula = Cation + OH^-
- Number of OH^- = charge on cation

Examples:

- $\text{Na}^+ + \text{OH}^- \rightarrow \text{NaOH}$
- $\text{Mg}^{2+} + 2\text{OH}^- \rightarrow \text{Mg}(\text{OH})_2$
- $\text{Ca}^{2+} + 2\text{OH}^- \rightarrow \text{Ca}(\text{OH})_2$

Importance of Acids

Hydrochloric acid:

- Secreted in the stomach for digestion.

Lactic acid:

- Formed in muscles due to lack of oxygen, causes cramps.

Properties of Acids vs. Alkalis

Property	Acids	Alkalis
Ion produced in water	H ⁺	OH ⁻
Litmus paper effect	Turns blue → red	Turns red → blue
Example substances	Lemon, Ketchup	Detergents, Baking soda

Conductivity of Acids & Alkalis

Strong acids:

- HCl, HNO₃, H₂SO₄ → good conductors

Weak acids:

- Vinegar, H₂SO₃ → poor conductors

NOTES

- NaOH conducts electricity better than NH₄OH → NaOH is a strong alkali, NH₄OH is a weak alkali.

Reaction Between Acids and Alkalis (Neutralization)



Example:

- HCl + NaOH → NaCl + H₂O
- Acids do not react with acids, and alkalis do not react with alkalis.

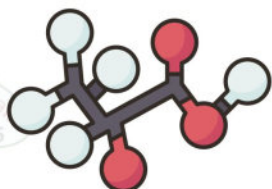
Medical Application

- Milk of magnesia (Mg(OH)₂) is used to neutralize gastric acidity in the stomach.

Metals and Nonmetals Oxides

Definition of Oxides:

- When an element (metal or nonmetal) burns in oxygen, it forms an oxide.



1 Metal Oxides (Basic Oxides)

- Produced by burning **metals** in oxygen.
- Dissolve in water to **form alkalis**.
- Basic oxides react with acids, **but not with alkalis**.

Example: Magnesium Burning

- Reaction:** Magnesium + O₂ → MgO
- MgO **dissolves in water** → Mg(OH)₂ (alkaline solution)
- Turns **red** litmus → **blue**

2 Nonmetal Oxides (Acidic Oxides)

- Produced by burning **nonmetals** in oxygen.
- Dissolve in water to **form acids**.
- Acidic oxides react with alkalis, **but not with acids**.

Example: Sulphur Burning

- Reaction:** Sulphur + O₂ → SO₃
- SO₃ dissolves in water → H₂SO₄ (acidic solution)
- Turns **blue** litmus → **red**

Summary of Oxide Behavior:

Oxide Type	Reacts With	Does NOT React With
Metal oxides	Acids	Alkalis
Nonmetal oxides	Alkalis	Acids

Acid Rains

Definition:

- is rain that results from the dissolution of acidic oxides in atmospheric water vapor.

Formation:

- Burning of fossil fuels (coal, petrol) in:
 - Cars
 - Factories
 - Power plants

→ releases acidic oxides like:

(Nitrogen dioxide (NO₂) \ Sulphur dioxide (SO₂))

- These oxides dissolve in atmospheric water vapor, forming:
 - Nitric acid (HNO₃)
 - Sulphuric acid (H₂SO₄)

→ fall as acid rain

Harmful Impacts of Acid Rain:

1. Destruction of forests
2. Harming aquatic organisms
3. Corrosion of buildings and monuments
4. Respiratory health issues in humans

Lesson3

Chemical Indicators

Definition:

- are substances that change color in acidic, alkaline, or neutral media.

Safety:

- Never **taste, smell, or touch** chemicals without teacher's permission.
- Some **acids** are **corrosive**, some **alkalis** are **caustic**.

Types of Indicators:

1 Litmus Indicator:

Medium	Strip Color Change
Acidic	Blue litmus → Red (due to H ⁺ ions)
Alkaline	Red litmus → Blue (due to OH ⁻ ions)
Neutral	No change in color

NOTES

Litmus cannot differentiate between **strong** and **weak** acids.

2 Universal Indicator:

- Differentiates between **strong/weak acids** and **alkalis**.
- Available as **dye or strips**.
- Shows a range of colors based **on pH strength**.

Indicators with Gases:

- **Acidic gases:** CO₂ → Blue litmus → Red
- **Basic gases:** NH₃ → Red litmus → Blue
- **Neutral gases:** H₂, O₂, N₂ → **No change**
- **Chlorine (Cl₂):** Bleaches both strips

Agricultural Application:

Hydrangea flowers:

- Red in acidic soil
- Blue in basic soil



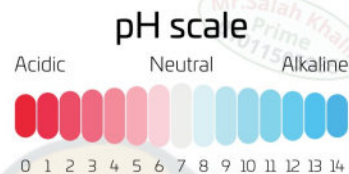
Red Cabbage Indicator:

Liquid	Color of Strip
Orange juice	Red (acidic)
Water	No change (neutral)
Baking soda	Greenish (alkaline)

pH (Potential of Hydrogen)

Scale from 0 to 14:

- 0–6: Acidic
- 7: Neutral
- 8–14: Alkaline



pH Value	Example Substances
0–1	Gastric acid
2–3	Lemon, Vinegar
4–5	Grapes, Tomato
6	Milk
7	Water
8–9	Baking soda, Egg
10–12	Soap, Ammonia
13–14	Oven cleaner

NOTES

- **Most acidic:** Gastric acid (pH ~0)
- **Least acidic:** Milk (pH <7)
- **Most alkaline:** Oven cleaner (pH ~14)
- **Least alkaline:** Egg (pH >7)

pH Measurement Methods:

- **pH Meter** : precise (accurately) reading
- **Universal Indicator Strips** : approximate by color

Life Applications:

- Red cabbage grows better in **basic soil** (pH 7.5–8.5).
- To increase soil pH (if acidic), **add Calcium hydroxide**.

Salts

Formation of Salts:

- Salt = Acid (H^+ + Anion) + Alkali (OH^- + Cation)
→ Salt + Water

Naming of Salts:

- Name = Cation + Anion
 - EX: Sodium + Chloride = **Sodium chloride**

Writing Molecular Formulas of Salts:

1. Start with the **cation** (metallic or positive atomic group)
2. Add the **anion** (nonmetallic or negative atomic group)
3. Make sure **total charge = 0**

Examples:

- Magnesium chloride : $MgCl_2$
- Ammonium sulphate : $(NH_4)_2SO_4$
- Sodium carbonate : Na_2CO_3
- Calcium nitrate : $Ca(NO_3)_2$

Types of Ions in Salt Formation:

1. Metal ion + Nonmetal ion → $Na^+ + Cl^- \rightarrow NaCl$
2. Atomic group ion + Nonmetal ion → $NH_4^+ + Cl^- \rightarrow NH_4Cl$
3. Metal ion + Atomic group ion → $Na^+ + NO_3^- \rightarrow NaNO_3$
4. Two atomic groups → $NH_4^+ + CO_3^{2-} \rightarrow (NH_4)_2CO_3$

NOTES

- **Distilled water** is a poor conductor
- **Solid salts** do not conduct electricity

Integration with Physics – The Dead Sea

- The Dead Sea has the **highest salinity** in the world, about **10 times** more than the Red Sea.
- It is **impossible to drown** in the Dead Sea because:
 - The **high percentage of salts** in water **increases density**, allowing the body to **float easily**.

Properties of Salts

Similarities:

- All are **solid**
- Their solutions or melts **conduct electricity**

Differences in Salts:

- (1) Color - (2) Solubility - (3) pH value

White Salts	Colored Salts
Zinc sulphate ($ZnSO_4$)	Copper sulphate ($CuSO_4$) – Blue
Sodium carbonate (Na_2CO_3)	Nickel chloride ($NiCl_2$) – Green

Classification of Salts

Classification According to Solubility in Water:

Soluble Salts (form solutions in water):

- All sodium, potassium, ammonium, and nitrate salts.
- Nickel chloride ($NiCl_2$)
- Copper sulfate ($CuSO_4$)

Example: Copper sulfate forms a **blue solution** when **dissolved** in water.

Insoluble or Sparingly Soluble Salts:

- All carbonate salts (except sodium, potassium, and ammonium carbonates).
- Silver chloride ($AgCl$)
- Calcium sulfate ($CaSO_4$)

Example: Calcium carbonate **does not dissolve** in water.

Classification According to pH Value:

→ Acidic Salt Solutions (pH < 7):

- Example: Ammonium chloride (NH_4Cl)

→ Neutral Salt Solutions (pH = 7):

- Example: Sodium chloride ($NaCl$)

→ Alkaline Salt Solutions (pH > 7):

- Example: Sodium carbonate (Na_2CO_3)

(Measured using universal pH indicator color scale)

Distance (d) and Displacement (s)

Distance: Total path length covered regardless of direction.

- Example: 170 km + 130 km + 150 km = 450 km

Displacement: Shortest straight path from start to end in a specific direction.

- Example: 100 km

Unit: Both are measured in metres (m), kilometres (km), or centimetres (cm).

Speed (v)

- **Definition:** Distance covered per unit time

- **Formula:**

$$\text{Speed} = \text{Distance} \div \text{Time} \quad (v = d \div t)$$

- **Units:**

- m/s (metres per second)
- km/h (kilometres per hour)

- **Conversions:**

- 1 min = 60 s
- 1 h = 60 min

NOTES

- Impact of Exceeding Speed Limits → Leads to increased road accidents.

Work (W)

- **Definition:** Energy used to move an object through displacement in the same direction of the force.

- **Formula:**

$$\text{Work} = \text{Force} \times \text{Displacement} \quad (W = F \times s)$$

- **Conditions for Work:**

✓ Same direction of force and motion

✗ No motion or perpendicular direction → No work

- **Units:**

- Work: Joule (J), Kilojoule (kJ)
- Force: Newton (N)
- Displacement: Metre (m)

too much

ضغوط علي
متنوت
منغطوط



Scientific Process: Controlling Variables

- **Independent Variable:** What is changed (EX: amount of water).
- **Dependent Variable:** What is measured (EX: plant growth).
- **Controlled Variables:** What stays constant (EX: soil type, light).

Energy (E)

Definition: The ability to do work

Measured in: Joule (J)

Forms of Energy:

1. Kinetic energy
2. **Potential Energy (PE):** Stored energy due to position
 - PE = Work done to store it
 - Measured in J
 - Example: Lifting a book = stored energy

Factors Affecting Potential Energy

A. Weight of the Object (w)

- **Activity:** Dropping marbles of different weights from the same height into sand.
- **Observation:** The deeper the crater, the heavier the marble.
- **Conclusion:**
 - **Controlled Variables:** Height of marbles, amount of sand.
 - **Independent Variable:** Weight of the marble.
 - **Dependent Variable:** Crater depth.
 - **Inference:** As weight increases, potential energy increases.

B. Height Above Ground Level (h)

- **Activity:** Dropping the same marble from different heights.
- **Observation:** Higher drops create deeper craters.
- **Conclusion:**
 - **Controlled Variables:** Marble weight, sand amount.
 - **Independent Variable:** Height of drop.
 - **Dependent Variable:** Crater depth.
 - **Inference:** Higher position = greater potential energy.

Final Conclusions from Activities

- Objects **above** ground have potential energy.
- **Factors:**
 - a. Weight (w), measured in Newtons (N).
 - b. Height (h), measured in meters (m).
- **More** weight/height = **more** potential energy.

Formula for Potential Energy

- PE = Weight (w) × Height (h)
- w = Mass (m) × Gravitational field intensity (g)
- Therefore, PE = m × g × h, with g = 10 N/kg

NOTES

- **Zero** Potential Energy → Object **on the ground** surface.

✓ Exapmle :

A. Calculate PE

- PE = m × g × h
- Example: m = 6 kg, h = 3 m → PE = 180 J

B. Calculate Weight

- w = PE / h
- Example: PE = 88 J, h = 11 m → w = 8 N

C. Calculate Height

- h = PE / w
- Example: PE = 10 J, w = 4 N → h = 2.5 m

Special Cases of Potential Energy

1. If weight doubles (height constant):
→ **PE doubles.**
2. If height halves (weight constant):
→ **PE halves.**
3. If weight doubles and height halves:
→ **PE remains constant.**

NOTES

- Chemical energy = potential energy in chemical bonds.
- Released during chemical reactions (EX : digestion, fuel burning).

Lesson2

Kinetic Energy (KE)

- **Definition:** The energy acquired by an object as a result of its motion.
- **Measured in:** Joule (J)

Factors Affecting Kinetic Energy:

1. Mass of the object (m)
 - More mass → more kinetic energy
2. Speed of the object (v)
 - More speed → more kinetic energy

Formula:

- KE = $1/2 \times m \times v^2$

Graphs:

- **Direct** relation between KE and mass (at constant speed)
- **Direct** relation between KE and square of speed (at constant mass)

Cases:

1. Halving mass → **KE halves**
2. Doubling speed → **KE increases by 4 times**
3. Halving mass & doubling speed → **KE doubles**
4. Quartering mass & doubling speed
→ **KE remains constant**

Comparison:

Case	Explanation
Same mass, different speeds	Higher speed → more KE
Same speed, different masses	Higher mass → more KE

Mechanical Energy (ME)

- **Definition:** Sum of potential and kinetic energy
- **Formula:**
 - ME = PE + KE

Pendulum Example :

- At highest point: **PE max**, KE = 0
- At original position (Bottom): PE = 0, **KE max**
- At Midpoint : **PE = KE**
- Energy conversion:
 - PE → KE during **descent**
 - KE → PE during **ascent**

NOTES

- Total mechanical energy **remains constant** in ideal conditions

PE vs KE Comparison

point	Potential Energy (PE)	Kinetic Energy (KE)
Definition	Stored due to position	Acquired due to motion
Affected by	Weight, Height	Mass, Speed
Formula	$PE = w \times h$	$KE = 1/2 \times m \times v^2$
Unit	Joule (J)	Joule (J)

Relation between PE and KE

- As PE decreases, KE increases, and vice versa
- Total ME remains constant
- illustrated using pendulum motion

Free Fall Example

- ME** remains constant during motion
- PE** is converted to KE as object falls
- Thrown Upwards:**
 - PE increases, KE decreases
 - ME is constant

Application Examples

- Medical :** Lift using legs, not back
- Electricity from High Dam:**
PE of water → KE → Turbine energy → Electricity
- Demolition Ball:**
PE of suspended ball → KE on release → Breaks building

Graphical Relations

- KE vs. Mass (at constant speed): Linear
- KE vs. v^2 (at constant mass): Linear



هبات

Effects on PE and KE

- Double mass (constant h) → PE doubles
- Half height (constant mass) → PE halves
- Double mass & half height → PE constant
- Half mass (constant v) → KE halves
- Double speed (constant mass) → KE $\times 4$
- Half mass & double speed → KE $\times 2$
- Quarter mass & double speed → KE constant

Unit3

Lesson1

The Ecosystem

Components

- Living** organisms: Plants, Animals, Birds.
- Non-living** (abiotic) components: Water, Air, Soil.

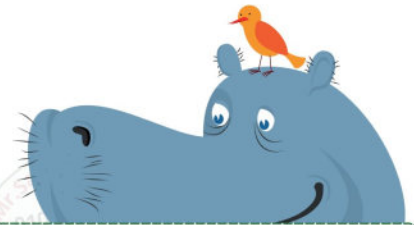
Levels of Ecosystem Organization

- Individual:** A single living organism of a specific species.
- Biotic population:** Group of individuals of the same species living in the same place and time.
- Biological community:** Various biotic populations of different species in one environment.
- The ecosystem:** Includes both living organisms (biological community) and non-living components.

Nutritional Relationships in Biological Communities

Types of Relationships

- Predation
- Competition
- Mutualism
- Commensalism



1. Predation

- Definition:** One organism (predator) benefits, and the other (prey) is harmed or killed.
- Examples:**
 - Lion (predator) eats zebra (prey).
 - Panther chameleon (predator) eats insect (prey).
 - Dionaea plant (predator) traps insect (prey).

2. Competition

- Definition:** Two individuals of the **same species** compete for limited resources.
- Effect:** Both are harmed (EX: two lions compete for a zebra).
- Result:** **Decreased** food resources **increase** competition.

3. Mutualism

- Definition:** Both individuals benefit without harm.
- Example:**
 - Bees and plant flowers:
 - Bees get nectar.
 - Plants get pollinated (pollen transfer).

4. Commensalism

- Definition:** One individual benefits (commensal); the other (host) is neither harmed nor benefited.
- Example:**
 - Egyptian plover bird benefits by feeding on food in the crocodile's teeth.
 - Crocodile is not affected.

Classification of Living Organisms in a Community

1 Producers

- Autotrophs** (make their own food by photosynthesis).
- Examples: Plants, Algae.

2 Consumers

- Heterotrophs** (depend on others for food).
- Classified into:
 - Herbivores:** Eat plants only (ex: horse, rabbit).
 - Carnivores:** Eat meat only (ex: lion, snake).
 - Omnivores:** Eat plants and animals (ex: bear, mouse).
 - Scavengers:** Eat dead remains (ex: hyenas, eagles, cockroaches).

3 Decomposers

- Break down dead organisms into simpler substances.
- Examples:** Bacteria, Fungi, Worms.

NOTES

- Decomposers:** Break down dead organisms chemically.
- Scavengers:** Feed on dead organisms without breaking down substances.

Summary of Nutritional Relationships

Relationship	Benefit/Harm
Predation	One benefits(predator), one harmed (prey)
Competition	Both are harmed
Mutualism	Both benefit
Commensalism	One benefits, the other is unaffected

Energy Flow Among Living Organisms

Food Chains

- Definition:** Shows the transfer of energy (who eats whom).
- Trophic Level:** Each level of energy transfer.

Food Chain Levels

- Producer:** First level (ex green plant).
- Consumer:** Higher levels (ex: squirrel).
- Decomposer:** Feeds on dead organisms (ex: fungi).

Example Food Chain:

Green Grass → Locust → Frog → Snake → Fungus

Organism	Role	Energy Source
Green Grass	Producer	Sunlight
Locust	Primary Consumer	Eats grass
Frog	Secondary Consumer	Eats locust
Snake	Tertiary Consumer	Eats frog
Fungus	Decomposer	From dead organisms

NOTES

All food chains start with a **producer** and end with a **decomposer**.

Types of Food Chains

1 Terrestrial Food Chain

1. Sun → Grass (Producer): Makes food via photosynthesis (Autotroph).
2. Grass → Rabbit (Primary consumer): Herbivore.
3. Rabbit → Snake (Secondary consumer): Carnivore.
4. Snake → Eagle (Tertiary consumer): Top predator.
5. After death: Bacteria and Fungi act as Decomposers, breaking down bodies into simpler substances.

2 Aquatic Food Chain

- Algae (Producer) → Copepod (Primary consumer) → Fish (Secondary consumer) → Seal (Tertiary consumer) → Polar bear (Quaternary consumer).

Ecological Balance

Bird migration:

- Locusts increase (fewer predators).
- Foxes decrease (fewer preys).

Chain Reaction Effects

- ↑ Primary consumers → ↓ Producers + ↑ Secondary consumers.
- ↓ Secondary consumers → ↑ Primary consumers + ↓ Tertiary consumers.

Energy Pyramid

- Represents energy flow between trophic levels.
- **Only 10%** of energy is transferred to the next level:
 - Producer → Primary consumer → Secondary → Tertiary.
- **90%** of energy is lost as heat, waste, etc.

Example:

- 1000 units at producer level:
 - Primary gets 100 units.
 - Secondary gets 10 units.
 - Tertiary gets 1 unit.

Energy Usage by Animals:

- 30% lost as heat/movement.
- 10% for growth/building.
- 60% lost in undigested waste.

Lesson2

Types of Traits

- All organisms show traits and behaviors categorized into three main types:

1 Genetic Traits

- Inherited from **parents without learning**.
- **Passed** from generation to generation.
- Examples:
 - Human hair and eye color
 - Arctic fox's short legs
 - Giraffe's long neck
 - Turtle's hard shell

2 Acquired Traits

- Gained **through learning or environment**.
- **Not passed** to next generation.
- Examples:
 - Walking, language learning
 - Muscular build
 - Dolphin playing with a ball
 - Horse jumping

3 Instinctive Behaviors

- Inherited, not learned.
- Examples:
 - Bat sleeping upside down
 - Chicken laying eggs
 - Squirrel cracking nuts
 - Spider weaving web
 - Bird building a nest

Example

- Reading & writing: **Acquired**
- Facial freckles: **Genetic**
- Curly hair: **Genetic**
- Breastfeeding: **Instinctive**



Chromosomes and Transmission of Traits

- **Reproduction:** Produces offspring similar to parents.
- **Genetic material is found in:**
 - Nucleus (eukaryotes)
 - Cytoplasm (prokaryotes)
- **Chromosomes:** Thread-like bodies carrying genetic material.
- Individuals of the **same species** have the **same chromosome count** in somatic cells.

Organism	Chromosomes
Human	46
Bee	32
Corn plant	20

NOTES

- Half inherited from father, half from mother.

Structure of Chromosomes & DNA

- **Chromosomes:** Made of two chromatids joined at centromere.
- **Chemical composition:**
 - DNA (nucleic acid)
 - Histone proteins

DNA Structure

- Composed of **genes** (segments of DNA)
- Genes code for traits
- DNA formed of **nucleotides** (smallest units)
- DNA is double-stranded (double helix)

Life Application: Lactose Tolerance

- **Lactose tolerance** is a beneficial spontaneous mutation.
- Converts lactose into **digestible sugars**.
- Intolerant people can use **alternatives**:

Dairy Product	Alternative
Butter	Olive oil
Milk	Soya milk
Coffee creamer	Almond milk
Milk chocolate	Dark chocolate

Gene Function & Genetics

- Gene → Enzyme → Chemical Reaction → Protein → Trait
- **Example:** Curly hair gene forms enzyme → chemical reaction → protein = curly hair
- Different arrangement of nucleotides **leads to different traits**.

Genetics

- **Study of hereditary traits**
- **Gregor Mendel:** Founder of genetics
 - Worked on 24,000 pea plants
 - Discovered traits are controlled by gene pairs

Mutations

Definition:

- Change in gene's nature or nucleotide arrangement leading to new traits.

Examples:

- Huge cows
- Human with six fingers

Types of Mutations

(1) According to Origin:

- **Spontaneous:** Natural (ex: Albinism)
- **Induced:** Human-caused (ex: Featherless chicken)

(2) According to Impact:

- **Harmful:**
 - Spinal deformity
 - Severe muscular dystrophy
- **Beneficial:**
 - Skin color adaptation
 - Seedless fruits
 - Rust-resistant wheat

Integration with Agricultural Science

• **Cubic watermelons:**

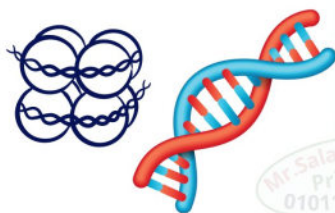
- Not mutation
- Molded during growth
- Helps in transport

Structure of Chromosomes & DNA

• **Chromosomes:** Made of two chromatids joined at centromere.

• **Chemical composition:**

- DNA (nucleic acid)
- Histone proteins



Unit4

Water: Importance and Distribution

- Water is essential for life.
- 70% of the human body is water.
- 71% of Earth's surface is water, but only 3% is fresh water.
- 97% of water is salt water.
- Fresh water is limited, so conservation is necessary.

Uses of Water:

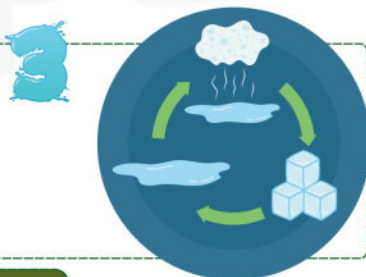
1. Drinking
2. Agriculture
3. Sanitation
4. Hygiene
5. Regulates Earth's temperature



States of Water

Water exists in 3 states:

1. Solid (ice)
2. Liquid (water)
3. Gas (water vapor)



Evaporation vs. Boiling

Process	Occurs at :	State Change
Evaporation	Any temperature by heat gain.	Liquid → Gas
Boiling	At 100°C (boiling point)	Liquid → Gas

NOTES

Tropical areas = more evaporation (vertical rays)

Polar areas = less evaporation (inclined rays)

Water State Transitions

Transition	Heat Action
Melting (Ice → Water)	Gaining Heat
Evaporation (Water → Vapor)	Gaining Heat
Condensation (Vapor → Water)	Losing Heat
Freezing (Water → Ice)	Losing Heat

Water Cycle

- Natural cycle of water moving between Earth's surface and atmosphere.

Sources of Water Vapor

1. **Evaporation** from oceans, seas, rivers
2. **Transpiration** from plants (loss of water vapor)
3. **Perspiration** (sweat) from humans and animals

NOTES

To **reduce water droplet formation** from condensation, increase the temperature of the upper surface — this **decreases the temperature difference**.

Multiple Pathways in the Water Cycle

- **Evaporation** : Sun heats water → vapor
- **Condensation** : Vapor cools → clouds
- **Precipitation** : Water returns as rain, snow, hail
- **Surface Runoff/Infiltration** : Water flows into rivers or ground

Precipitation Forms

- **Groundwater** → Infiltrated rain
- **Surface Runoff** → Flows over land
- **Snow** → Clouds below freezing
- **Hail** → Accumulated ice crystals

Essential Water Cycle Factors

1. **Sun's Heat** : Drives evaporation
2. **Earth's Gravity** : Brings water back down (precipitation)
→ Maintains ecosystem balance

Water Pathways & States

Water Pathway	State of Water
Evaporation	Gas
Condensation	Liquid
Surface Runoff	Liquid
Transpiration	Gas
Precipitation	Liquid / Solid
Infiltration	Liquid

Desalination of Seawater

Definition:

Removing salt from seawater to produce fresh water.

How:

- Uses evaporation and condensation
- Heat → vapor → condenses into fresh water

Importance:

- Solves fresh water shortage for drinking and farming, especially in remote areas.

Lesson2

Rocks and Their Formation

- **Rocks** : are solid materials composed of one or more minerals.
- Found on Earth's surface, beneath it, or at the bottom of oceans.

Classification of Rocks (by Formation):

1. Sedimentary Rocks
2. Metamorphic Rocks
3. Igneous Rocks

Geological Processes in Rock Formation:

- Weathering → Erosion → Melting and Crystallization



1 Weathering

- The process of breaking down rocks over millions of years.

Types:

a. **Mechanical Weathering:** Breakdown **without** chemical change.

Causes:

- Freezing of water in cracks
- Water flow
- Wind blowing
- Growth of plant roots
- Thermal expansion and contraction

b. **Chemical Weathering:** Breakdown **with** chemical changes.

Causes:

- Acids and minerals in groundwater
- Acid rain
- Hot springs (Yellowstone National Park example)

Spherical Weathering:

- Chemical weathering that shapes rocks into spherical forms.
- Corners of rock blocks weather faster.

2 Erosion

- Movement of weathered rock fragments (sediments).
- Includes transportation and sedimentation:
 - **Sediments:** Rock fragments transported from original site.
 - **Sedimentation:** Deposition of sediments in new areas.

Factors:

- Water speed affects sediment size (fast flow = larger particles).
- **Double-edged impact:**
 - **Positive:** Soil formation, river deltas.
 - **Negative:** Coastal erosion.

Lithification Process:

- Pressure compacts sediments into layers forming Sedimentary Rocks.
- Examples: Limestone, Sandstone, Claystone

Characteristics of Sedimentary Rocks:

- Porous (have spaces)
- Contain fossils (remains of old organisms)

3 Melting and Crystallization**A. Metamorphic Rocks**

- Formed by **pressure** and **heat** (without melting).
- Example Transformations:
 - Limestone → Marble
 - Sandstone → Quartzite

B. Igneous Rocks

- Formed by **cooling** and **solidification** of magma/lava.
- **Magma**: Molten rock beneath the surface.
- **Lava**: Magma on Earth's surface.

Types of Igneous Rocks:**1. Plutonic (Intrusive):**

- Formed by **slow** cooling of magma (large crystals)
- **Example**: Granite, Gabbro

2. Surface (Extrusive):

- Formed by **fast** cooling of lava (small crystals)
- **Example**: Basalt, Pumice

NOTES

- **Granite's crystals visible** to the naked eye , **basalt's are not.**

Construction Use of Rocks:

1. **Limestone**: Used in Pyramids of Giza
2. **Marble**: Used in Taj Mahal, India

**Rocks and Their Formation**

- The transformation of rocks from one type to another due to:
 - Weathering & Erosion
 - Compaction & Lithification
 - Heat & Pressure
 - Melting & Cooling

Cycle Steps:

1. Igneous rocks → weathered → sediments
2. Sediments → compacted → sedimentary rocks
3. Sedimentary rocks → heat & pressure → metamorphic rocks
4. Metamorphic rocks → melt → magma → cools → igneous rocks again

Types of Rocks**There are three main types of rocks:****1. Sedimentary Rocks**

- Formed by the **compaction** and **lithification** of sediments.
- **Examples**:
 - Limestone
 - Sandstone
 - Claystone

**2. Metamorphic Rocks**

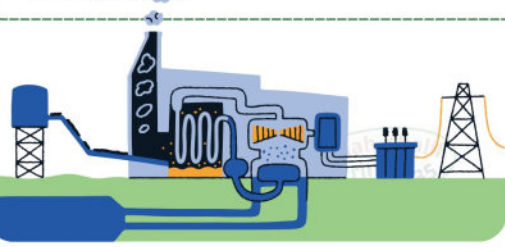
- Formed when existing rocks are exposed to **heat and pressure** without melting.
- **Examples**:
 - Marble (from limestone)
 - Quartzite (from sandstone)

3. Igneous Rocks

- Formed from the **cooling and solidification** of magma/lava.
- **Divided into**:
 - **Plutonic Igneous Rocks** (cool slowly inside Earth): Granite, Gabbro
 - **Surface Igneous Rocks** (cool quickly on the surface): Basalt, Pumice

Formation of Fossil Fuels

1. Photosynthesis: Plants convert solar energy into chemical energy.
2. This energy is transferred through food chains.
3. Over millions of years, buried plants and animals undergo physical & chemical changes, forming fossil fuels.



Types of Fossil Fuels

1. Coal

- Organic origin: Plants (especially large trees)
- Formation: Burial → heat & pressure → coal

2. Petroleum Oil

- Organic origin: Marine microorganisms
- Extracted by drilling

3. Natural Gas

- Organic origin: Marine microorganisms
- Main component: Methane gas (over 90%)
- Formed alongside petroleum oil

Part 3

Scientific term

متخفش من عددهم كلهم حجات بسيطة
افهمهم هتلاقي حفظهم سهل جداً

1 Lithification

- Sediments get pressed into layers to form rocks.

2 Sedimentary rocks

- Rocks made from compressed sediments.

3 Metamorphic rocks

- Rocks changed by heat and pressure (not melted).

4 Magma

- Hot molten rock inside the Earth.

5 Lava

- Magma that reaches the surface.

6 Igneous rocks

- Rocks formed from cooled lava or magma.

7 Rock cycle

- Rocks change types by weathering, melting, pressure, etc.

8 Fossil fuel

- Fuel from buried plants/animals over millions of years.

9 Evaporation

- Liquid water becomes gas.

10 Condensation

- Gas becomes liquid water.

11 Water cycle

- Water moves between air and Earth in a cycle.

12 Transpiration

- Plants release water vapor.

13 Precipitation

- Rain, snow, or hail falling from clouds.

14 Surface runoff

- Rainwater flows to rivers and lakes.

15 Desalination

- Removing salt from seawater.

16 Rocks

- Solid material made of minerals.

17 Weathering

- Rocks breaking down over time.

18 Mechanical weathering

- Physical break without chemical change

19 Chemical weathering

- Rock changes chemically

20 Spherical weathering

- Rocks become round from erosion.

21 Sediments

- Broken rock particles

22 Sedimentation

- Sediments settle in layers.

23 Erosion

- Moving sediments from one place to another.

24 Genes

- DNA parts that control traits.

25 Nucleotide

- Smallest DNA unit.

26 Genetics

- Study of inherited traits.

27 One gene-one enzyme

- Each gene makes one enzyme for a trait.

28 Mutation

- New trait from gene change.

29 Spontaneous mutation

- Happens naturally.

30 Induced mutation

- Caused by humans

31 Harmful mutation

- Bad trait or causes disease

32 Beneficial mutation

- Good new trait.

33 Producers

- Make their own food (photosynthesis).

34 Consumers

- Eat producers or other consumers

35 Decomposers

- Break down dead organisms

36 Food chain

- path of energy moves from one organism to another

37 Trophic level

- Level in food chain

38 Biological control

- Use organisms instead of pesticides.

39 Food web

- Linked food chains

40 Energy pyramid

- Shows energy flow in food chain levels.

41 Genetic traits

- Inherited without learning

42 Acquired traits

- Learned from the environment

43 Instinctive behaviors

- Born with these behaviors

44 Reproduction

- Making offspring

45 Chromosomes

- Hold DNA

46 Centromere

- Joins the chromosome parts

47 Species

- A group of similar organisms

48 Individual

- One organism

49 Biotic population

- Same species in one area

50 Biological community

- Different species in one area

51 Ecosystem

- All living and non-living things in an area

52 Predation

- One benefits, the other is harmed.

53 Predator

- The one that benefits

54 Prey

- The one that is harmed

55 Competition

- Same species fight for resources

56 Mutualism

- Both two individuals benefit

57 Commensalism

- One benefits, the other not harmed

58 Commensal

- The one that benefits

59 Host

- Individual that not harmed , not helped

60 Distance

- Total path traveled

61 Displacement

- Shortest straight line between start and end

62 Speed

- Distance per time

63 Work

- Force over a distance

64 Potential energy

- Stored energy

65 Kinetic energy

- Moving energy

66 Mechanical energy

- Potential + kinetic energy

67 Path of movement

- The route taken during motion

68 Controlling variables

- Keeping things constant in experiments

69 Independent variable

- What you change

70 Dependent variable

- What you measure

71 Controlled variables

- the variable that you keep the same

72 Energy

- Ability to do work

73 Metallic bond

- Attraction between metal ions and electrons

74 Alloy

- Mix of two or more metals

75 Recycling

- Turning waste into useful things

76 Atomic group

- Ion with multiple atoms/elements

77 Acid

- Increases H^+ in solution

78 Alkali

- Increases OH^- in solution.

79 Basic oxides

- Metal oxides forming alkalis

80 Acidic oxides

- Nonmetal oxides forming acids

81 Acid rain

- Rain with dissolved acidic gases

82 Indicators

- Change color in acid/base

83 Universal indicator

- Shows acid/alkali strength

84 pH

- Scale 0–14 to show acidity/basicity

Part 4**Give reasons****1 Yellowstone hot springs → chemical weathering**

- Because hot water breaks and changes rock structure chemically

2 Melting ice ≠ chemical weathering

- Because water's chemical structure doesn't change

3 Erosion = double-edged sword

- Good: forms soil & deltas. Bad: destroys coasts.

4 Granite crystals > Basalt crystals

- Granite forms slowly from magma, basalt forms quickly from lava.

5 Sunlight = energy source in fossil fuels

- Plants store sun energy → turns into fossil fuel over time.

6 Fresh water conservation is essential

- Only 3% of Earth's water is fresh

7 Boiling point is a substance property

- Each pure substance has a specific boiling point

8 Water droplets on a cold cup

- Due to condensation of air vapor

9 Sun & gravity maintain water cycle

- Sun causes evaporation, gravity brings rain back.

10 Desalination in remote areas

- To solve fresh water shortage.

11 Freezing water cracks rocks

- Because water expands when frozen

12 Mineral expansion/contraction breaks rocks

- Heat expands and cold contracts the minerals

13 Light skin in cold areas = beneficial spontaneous mutation

- Helps absorb vitamin D; occurs naturally.

14 Square watermelon = technique, not mutation

- Shape comes from mold, no gene change

15 Lactose tolerance = beneficial mutation

- Breaks down milk sugar easily

16 Producers make food, consumers eat it

- Producers do photosynthesis; consumers depend on them.

17 Food chain studies help biological control

- Used to design pest control using living organisms

18 Ladybugs protect crops

- They eat aphids that harm plants.

19 No isolated food chains in nature

- Organisms feed at multiple levels

20 Energy decreases in food pyramid

- Only 10% of energy moves to the next level.

21 DNA = double helix

- Made of two twisted strands

22 DNA = source of genetic info

- Made of genes that control traits

23 Genes control traits

- They make enzymes that trigger trait-related proteins.

24 Albino child from dark-skinned mother = spontaneous mutation

- It happens naturally, without human cause.

25 Bees and flowers = mutualism

- Bees get nectar, plants get pollinated.

26 Crocodile and plover bird ≠ mutualism

- Only bird benefits; crocodile is unaffected

27 Going up increases potential energy, but mechanical stays constant

- Because kinetic energy decreases equally.

28 High Dam generates energy

- Water's stored energy becomes turbine movement

29 Demolition ball = energy conversion

- Potential energy turns into motion (kinetic) energy

30 Pushing a wall = no work

- Because there's no displacement

31 Pushing a cart = work

- Force moves in the same direction.

32 Fuel in cars = food in bodies

- Both release energy via chemical reaction

33 Truck has more kinetic energy than a car at same speed

- Because it has more mass

34 Pendulum at center = max kinetic energy

- Speed is highest at that point

35 Falling object gains kinetic energy

- Speed increases, so kinetic energy does too

36 At max height, KE = 0 and PE is max

- Because total mechanical energy stays the same

37 Milk of magnesia for acidity

- Neutralizes acid ($Mg(OH)_2$).

38 Burning fossil fuels = acid rain

- Releases SO_2 & NO_2 into atmosphere

39 Acid rain harms humans and nature

- Destroys forests, aquatic life, and buildings

40 Don't touch chemicals without permission

- Some can burn or corrode skin.

41 Neutral water doesn't affect litmus paper

- $H^+ = OH^-$ so no color change

42 Can't tell HCl from acetic acid with litmus

- Both give same color

43 Hydrangea color depends on soil

- Red = acidic, Blue = basic

44 pH meter > universal indicator

- More accurate and gives exact value

45 Grapes more acidic than tomatoes

- Lower pH means stronger acid

46 Most salts = ionic compounds

- Made from positive and negative ions

47 Aluminum wires used in electricity

- Good conductor, malleable and strong

48 Graphite used in dry cells

- Only non-metal that conducts electricity

49 Sulphur crumbles, iron bends

- Sulphur = brittle, iron = malleable

50 Aluminum > Sodium in hardness/melting point

- More valence electrons → stronger metallic bonds

51 Bronze used in jewelry, not copper

- Harder and doesn't rust

52 Compound charge = 0

- Positive = negative charges.

Part 5
What Happens:

1 Vehicle exceeds speed limits

- Road accidents increase.

2 Object travels same distance in half the time

- Speed doubles.

3 Applying suitable force to a still object

- Object moves in the force's direction.

4 Force is halved & displacement is doubled (work)

- Work stays the same

5 Valence electrons in metals increase

- Stronger metallic bond → metal becomes harder with higher melting point

6 Adding molten metal to another

- Forms an alloy with new properties

7 Lactic acid builds up in muscles

- Muscle cramps occur

8 Magnesium burns in oxygen & dissolves in water

- Forms magnesium hydroxide ($Mg(OH)_2$).

9 Sulphur burns in oxygen & dissolves in water

- Forms sulphuric acid (H_2SO_4).

10 Acids react with alkalis

- Salt and water form

11 Blue litmus in acetic acid and distilled water

- Turns red in acid, stays blue in water

12 Blue and red litmus in pH 11 solution

- Red strip turns blue (basic solution).

13 Red & blue litmus near ammonia gas

- Red strip turns blue (ammonia is basic).

14 Nickel & silver chloride stirred in water

- Nickel chloride dissolves, silver chloride does not

15 Weight doubles, height same (Potential Energy)

- Potential energy doubles

16 Height halves, weight same (Potential Energy)

- Potential energy halves

17 Weight doubles, height halves (Potential Energy)

- Potential energy stays the same

18 Mass halves, speed same (Kinetic Energy)

- Kinetic energy halves

19 Speed doubles, mass same (Kinetic Energy)

- Kinetic energy becomes 4 times greater

20 Speed doubles, mass halves (Kinetic Energy)

- Kinetic energy doubles

21 Mass = $\frac{1}{4}$, speed doubles (Kinetic Energy)

- Kinetic energy stays the same

22 Pendulum released after being drawn up

- Slows away from center, fastest at center

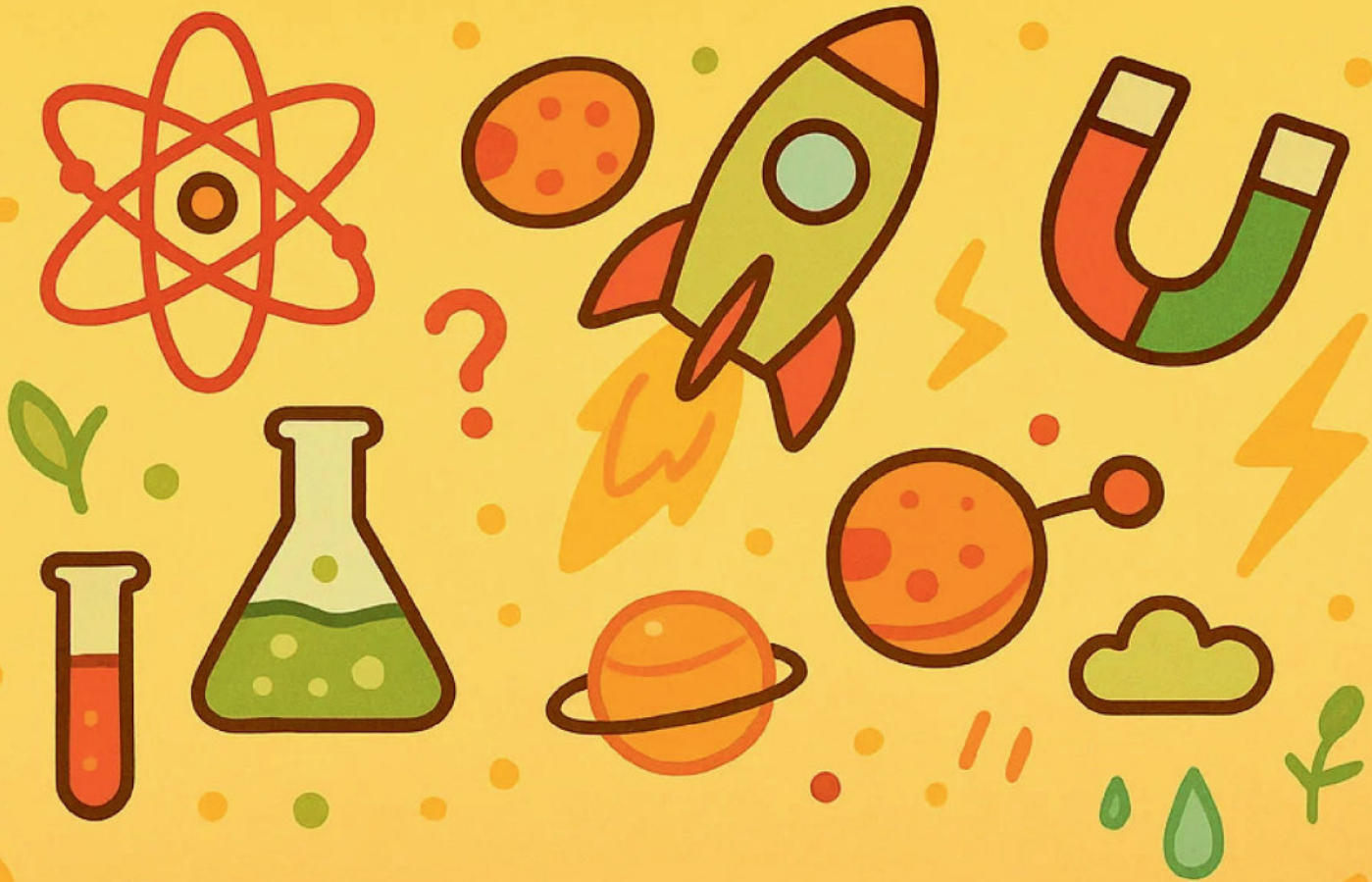
23 Pendulum at top point

- Kinetic = 0, Potential = Max.

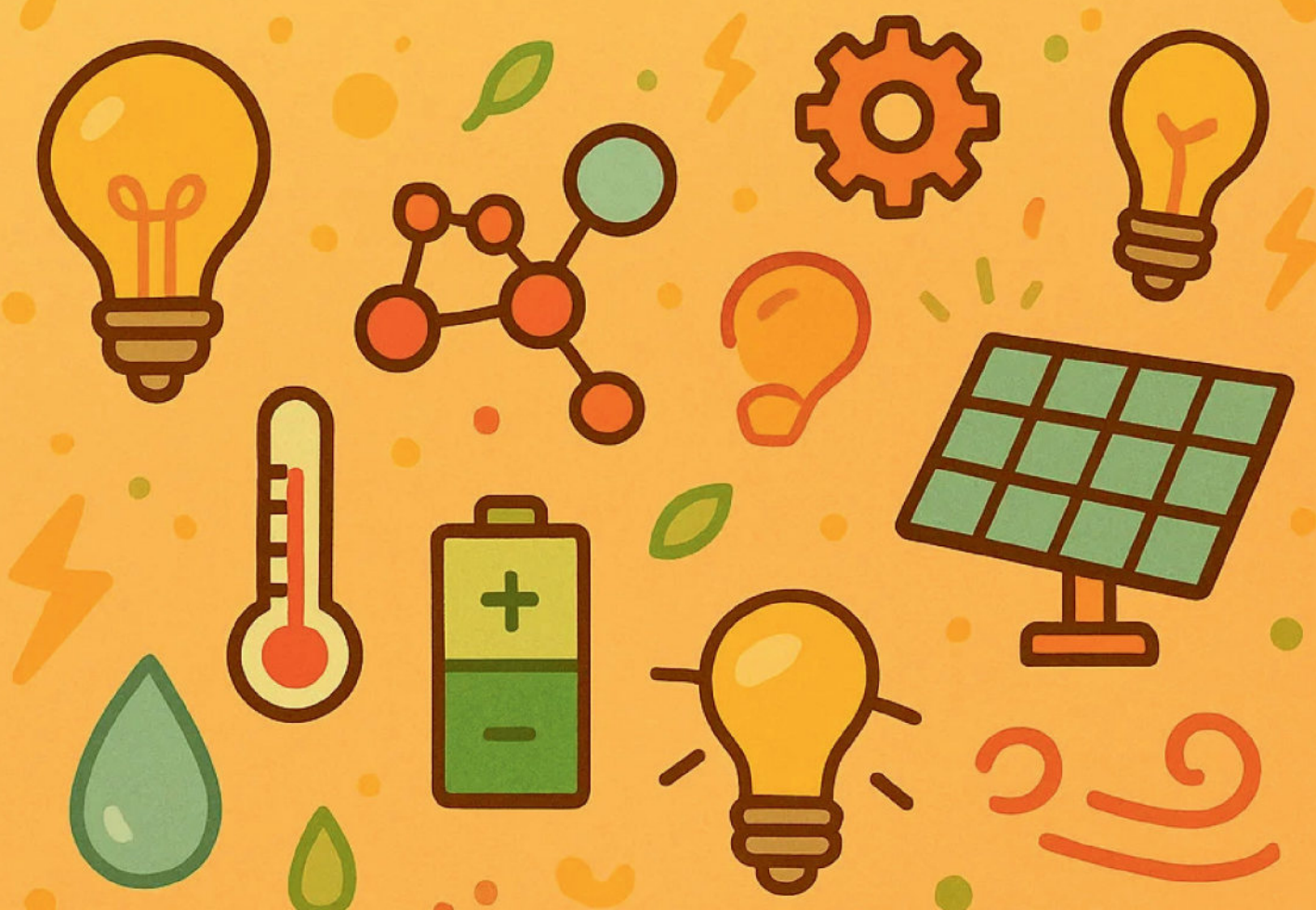
24 Pendulum at center/original point

- Kinetic = Max, Potential = 0.





Questions



تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهز

Section 1

1 Choose the correct answer:

- 1 Which of the following describes sodium metal ?
 - a Opaque, soft, heat conductor.
 - b Brittle, solid, formable.
 - c Shiny, soft, heat conductor.
 - d Ductile, transparent, electrical conductor.
- 2 If the speed of an object decreases to half while its mass remains constant, then its kinetic energy.....
 - a decreases to half.
 - b decreases to a quarter
 - c increases to four times
 - d is doubled
- 3 Bromine element is similar to graphite in the
 - a colour
 - b physical state
 - c type of element
 - d electrical conductivity
- 4 Bromine and mercury are similar in the
 - a colour
 - b physical state
 - c heat conductivity
 - d boiling point
- 5 What is the common property in both copper and iron?
 - a Colour
 - b Density
 - c Melting point
 - d Electrical conductivity

2 Complete the following statements :

- 1 The production of seedless lemons is a result of mutations
- 2 is considered the founder of genetics, and he conducted his experiments on the plant
- 3 Each gene consists of smaller units called.....
- 4 The mixture used in separating strawberry chromosome consists of and with
- 5 The water is stored beneath the Earth's surface.

3 put (✓) or (x) for each statement :

- 1 The animal is the only living organism that makes its own food.
- 2 The primary consumer is always a herbivore.
- 3 Number of rabbits in a biological community increases when predators decrease.

4 Write the scientific term or define the following as required:

- 1 They are non-metal oxides, that dissolve in water forming acids (.....)
- 2 Atomic group :
- 3 The distance covered per unit of time (.....)

5 Various questions

1 What is the difference between each of the following :

1- Litmus indicator and universal indicator

.....

.....

2- The nutritional relationship between each of a commensal and a host , a predator and a prey.

.....

.....

2 Clarify the relation between :

1- Temperature and type of precipitation.

.....

.....

2- The height and potential energy.

.....

.....

3 State :

1- Two cases in which no work is done.

.....

.....

2- Two sources of water vapour in nature other than water bodies

.....

.....

6 Give a reason for the following :

Yellowstone national Park is an example of chemical weathering.

.....

.....

7 What happens if ...?

A bottle of water is filled to its top and placed in the refrigerator for several hours.

.....

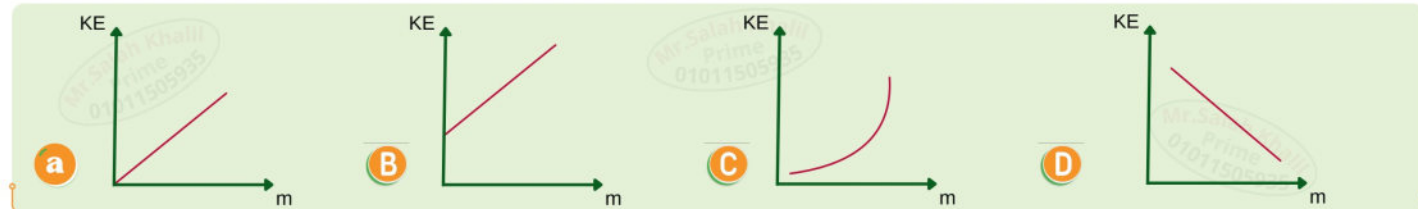
.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 2

1 Choose the correct answer:

1 The relation between the kinetic energy of an object and the mass for several objects at constant speed is represented by the graph



2 The element whose boiling point is 2807°C and its melting point is 1064°C is.....

- a bad electrical conductor b brittle c formable d opaque

3 Which of the following represents bronze?

- a An alloy and a compound b An alloy and a mixture
c A nonmetal with a compound d A metal with a mixture

4 The electron configuration of the following elements ends with less than 4 electrons. except that of.....

- a hydrogen b sodium c phosphorus d Magnesium

2 Complete the following statements :

1are brittle elements that are not malleable or ductile.

2 All metals are except which is a liquid.

3 The bronze alloy is composed of at 95% and tin at

4 acids are those that contain oxygen element, while acids don't contain oxygen element.

5 The compound H_2S is known as..... in its gaseous state, while it is known as in its solution form.

3 put (✓) or (x) for each statement :

1 Rocks are solid bodies composed of only one mineral

2 Only chemical changes lead to geological processes in rocks

3 Freezing of water in cracks in rocks leads to their freezing

4 Write the scientific term or define the following as required:

1 It is the stored energy in the object, as a result of the work done on it (.....)

2 Energy :

5 Various questions

1 How can the following be indicated :

(1) Limestone is a sedimentary rock.

(2) The mouse is an omnivore.

(3) Sodium carbonate solution is alkaline.

(4) Force does work.

2 Clarify the role of each of the following :

(1) The difference in temperatures between night and day in mechanical weathering.

(2) Spotted beetles in biological control.

(3) Salts in the density of Dead Sea water.

(4) The processes of evaporation and condensation in facing the shortage of drinking water resources.

6 Give a reason for the following :

The water coming from Ethiopia appears brown.

7 What happens if ...?

Water freezes in cracks between rocks.

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 3

1 Choose the correct answer:

1 The object whose mass is 2 kg and its speed is 3 m/s has a kinetic energy equals

- a 6 J B 9 J C 6 kJ D 9 kJ

2 From the causes of chemical weathering is.....

- a water flow B wind blowing C acid rains D growth of plant roots

3 The conversion of gas into liquid represents the..... process

- a boiling B condensation C evaporation D melting

4 Which of the following elements is characterized by a low melting point ?

- a Sulphur B Silver C Sodium D Copper

2 Complete the following statements :

1 The dissolution ofoxides in water forms acids, while the dissolution of oxides in water forms alkalis.

2 The organic origin of coal is, while the organic origin of natural gas is

3 are formed from the exposure of the rocks to extreme pressure and heat.

4 traits are transmitted from parents to offspring Without learning.

5 Gabbro from igneous rocks, while pumice from igneous rocks.

3 put (✓) or (x) for each statement :

1 Calcium carbonate powder is used to make casts for broken bones.

2 Yellowstone National Park is a good example of chemical weathering.

3 Rocks are classified into three types: sedimentary, igneous, an calcareous

4 Write the scientific term or define the following as required:

1 are ionic compounds formed due to reaction between alkalis and acids. (.....)

2 Acid rain :

3 A set of points that an object passes through during its motion (.....)

4 The individual :

5 Various questions

1 Compare between each of the following :

(1) Basalt rock and granite rock (In terms of : The place of formation).

.....

.....

(2) The melting process and the evaporation process. (In terms of : Matter conversion).

.....

.....

(3) Copper and sulphur (In terms of : Formability).

.....

.....

(4) The biological community and the ecosystem (In terms of : The composition).

.....

.....

2 Write the law expressing the relation between each of the following :

1- Speed and distance.

.....

.....

2- Speed and kinetic energy.

.....

.....

6 Give a reason for the following :

Erosion is both a beneficial and harmful process for the environment.

.....

.....

7 What happens if ...?

The temperature of the minerals that make up the rock rises during the day.

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيقات مذكرات جاهزة

Section 4

1 Choose the correct answer:

- 1 The production of cubic-shaped watermelons is considered to be.....
 - a induced mutations
 - b agricultural techniques
 - c inherited traits
 - d genetic modification techniques
- 2 Human liver cells contain chromosomes.
 - a 20
 - b 23
 - c 32
 - d 46
- 3 The centromere connects between.....
 - a two chromosomes
 - b two chromatids
 - c two genes
 - d two nucleotides
- 4 The nucleic acid DNA is wrapped around a type of protein known as.....
 - a hormones
 - b genes
 - c histones
 - d chromosomes

2 Complete the following statements :

- 1 Spinal curvature is a result of mutations, while are a result of lethal mutations
- 2 Water exists in three states: , and
- 3 A change in the pH value of a solution from 7 to 12 means it was and become
- 4 Bromine is a liquid while mercury is a metal
- 5 The pH value is accurately measured by using.....

3 put (✓) or (x) for each statement :

- 1 The chromosome is chemically composed of DNA and protein
- 2 DNA is made up of small parts known as nucleotides
- 3 Spontaneous mutation occurs without human intervention

4 Write the scientific term or define the following as required:

- 1 It includes the various populations of different species that inhabit the same environment (.....)
- 2 Food chain :
- 3 They are living organisms that obtain their food from the dead bodies. (.....)
- 4 Food webs :

5 Various questions

1 Arrange the following :

(1) Magnesium / Aluminum / Sodium (Descendingly according to the strength of the metallic bond)

.....

(2) Clay / Silt / Sand (According to the speed of their flow during the erosion process).

.....

2 Among the known acids are acetic acid and hydrochloric acid :

1- Why can not litmus strip be used to differentiate between them ?

.....

2- Which of these acids has a pH value closer to zero? Explain.

.....

3 What is the difference between :

1- Acquired traits and genetic traits.

.....

.....

2- Hydrogen chloride and hydrochloric acid.

.....

.....

6 Give a reason for the following :

Sedimentary rocks are characterized by being porous.

.....

.....

7 What happens if ...?

Adding drops of hydrochloric acid to a piece of limestone

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيقات مذكرات جاهزة

Section 5

1 Choose the correct answer:

- 1 Among the omnivores.....
 - a bear and hyena b mouse and raven c hyena and cockroach d bear and eagle
- 2 A food chain consists of a copepod, polar bear, seal, algae and fish. Which of the following represents the fish in this food chain?
 - a Primary consumer b Producer c Secondary consumer d Tertiary consumer
- 3 What is the main source of energy in food chains ?
 - a Photosynthesis process b Green plants c Decomposers d The sun
- 4 The nutritional relationship between bear and fish is considered a.....
 - a mutualism b competition c commensalism d predation

2 Complete the following statements :

- 1 The pH value of a table salt solution (sodium chloride) is
- 2 From neutral gases on litmus paper are and.....
- 3is the one that is neither benefited nor harmed in commensalism relationship.
- 4 is considered the basic unit in the classification of living organisms.
- 5 The rabbit and the horse are considered because they have for cutting plants.

3 put (✓) or (x) for each statement :

- 1 Production of featherless chickens is considered induced mutation
- 2 Scoliosis from lethal mutations
- 3 Severe muscle atrophy and weakness from lethal mutations

4 Write the scientific term or define the following as required:

- 1 It is the gained energy by an object as a result of its motion (.....)
- 2 Evaporation :
- 3 Conversion of water from liquid state to gas state by gaining heat (.....)
- 4 The water cycle :

5 Various questions

1 How can each of the following be indicated :

(1) Granite is a plutonic igneous rock.

.....

(2) The appearance of lactose tolerance mutation in a person.

.....

(3) Alkalinity of a chemical solution.

.....

(4) An element is a metal.

.....

2 To whom are the following works attributed :

(1) The founder of genetics science.

.....

(2) The developer of the pH scale.

.....

3 On adding drops of acid to rock (x), a gas evolves that goes out a lit matchstick :

1- Identify the name and the type of rock (X).

.....

2- What happens when rock (X) is subjected to pressure and heat?

.....

6 Give a reason for the following :

The work done by the car is less than the work done by the truck, even though their speeds are equal.

.....

.....

7 What happens if ...?

Bringing a matchstick close to the gas produced by adding acid to the limestone

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهز

Section 6

1 Choose the correct answer:

1 Herbivores obtain energy from.....

- a feeding on animals only
- B feeding on plants only
- C feeding on both plants and animals
- D the sun directly

1 Each of the following describes graphite, except that it.....

- a is used in the manufacture of dry cell
- B is a bad conductor of electricity
- C is a brittle nonmetal
- D has no metallic luster

3 A runner covers a distance of 250 m in 50 s , What is the runner's speed ?

- a 0.2 m/s
- B 0.24 m/s
- C 4.2 m/s
- D 5 m/s

4 Which of the following expresses the mass and weight of an object on the surface of the ground ?

- a Mass: 2.4 kg, Weight: 12.4.N
- B Mass: 3.2 kg, Weight: 0.32 N
- C Mass: 25 kg, Weight: 25 N
- D Mass: 36 kg, Weight: 360 N

2 Complete the following statements :

1 Nitric acid is a acid, while acid is a weak acid.

2 are substances that are all solid, whose solutions and melts conduct electricity.

3 A body moves at a speed of 20 km/h, so the distance travelled after three hours equals

4 Work = ×

5 Kinetic energy is proportional to mass and square of

3 put (✓) or (x) for each statement :

1 Light skin color people living in cold regions due to beneficial mutations

2 Production of cube-shaped watermelons from induced mutations

3 Beneficial mutations cause the appearance of desirable traits

4 Write the scientific term or define the following as required:

1 Solid materials composed of one or several minerals

(.....)

2 Alloys :

.....

3 It is process of the conversion of the wastes into new usable substance

(.....)

4 Transpiration process :

.....

5 Various questions

1 Arrange the following :

(1) Weathering and erosion / Formation of igneous rock / Formation of sedimentary rock / Magma eruption / Compaction and lithification.

"According to the order of occurrence"

.....

(2) Distilled water / Sodium hydroxide / Hydrochloric acid / Tomatoes. "According to pH value".

.....

2 Mention one importance for each of:

1- Genes.

.....

2- Bronze alloy.

.....

3 Mention

1- A characteristic instinctive behaviour of squirrels

.....

2- the main cause of rock weathering in he White Desert National Park

.....

6 Give a reason for the following :

The kinetic energy of the car decreases when the driver presses the car's brakes.

.....

7 What happens if ...?

Lack of food sources in a balanced ecosystem

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأفضل مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 7

1 Choose the correct answer:

- 1 At the midpoint of the vertical distance between the point of fall of a ball and the surface of the ground,.....
 - a PE > KE
 - b KE = PE
 - c KE > PE
 - d PE = ME
- 2 If the kinetic energy of an object increases by 20 J during its fall, then its potential energy.....
 - a increases by 20 J
 - b increases by 40 J
 - c decreases by 20 J
 - d decreases by 40 J
- 3 Each of the following expresses physical quantities, with their correct measuring units, except for.....
 - a speed (m/s)
 - b work (N.m)
 - c force (N)
 - d energy (N/m)
- 4 Chlorine gas can be detected by using.....
 - a a lit matchstick
 - b clear limewater
 - c a dry strip of universal indicator
 - d a wet litmus strip

2 Complete the following statements :

- 1 Non-living components in the ecosystem such as.....and
- 2 are animals feed on both meat and plants, such as and
- 3 are called autotrophic organisms, while consumers are called organisms.
- 4 The number of rabbits in a biological community when the number of predators
- 5 The food chain begins with such as plants and ends with such as and

3 put (✓) or (x) for each statement :

- 1 People who suffer from lactose intolerance experience cramps and nausea when they eat meat
- 2 Breastfeeding is an acquired trait
- 3 The number of chromosomes in humans is 46 chromosomes, and in corn is 32 chromosomes

4 Write the scientific term or define the following as required:

- 1 Particles of rock fragments transported away from the area where weathering occurred (.....)
- 2 Metallic bond :
- 3 Conversion of water from as state to liquid state by losing heat (.....)

5 Various questions

1 How can each of the following be indicated :

1- The danger of concentrated sulphuric acid.

.....

2- The transformation of the force acting on an object into work.

.....

2 Give one example of each of the following

1. Positive atomic group (.....)
2. A negatively charged atomic group. (.....)
3. Gas that turns blue litmus paper into red (.....)
4. Gas turns red litmus paper into blue (.....)
5. White salts (.....)
6. Coloured salts (.....)
7. Salts dissolve in water (.....)
8. Salts that are sparingly soluble in water (.....)
9. A gas that has a neutral effect on litmus paper (.....)
10. Chemical indicator that measures pH (.....)
11. Non-oxygenated acid that forms an anion in a liquid state (.....)
12. Acid secreted by the stomach (.....)
13. Oxygenated acid carries three negative charges. (.....)
14. Acid secreted by muscles (.....)
15. Weathering and erosion processes together (.....)
16. A strong acid. (.....)
17. A weak acid. (.....)
18. A strong alkali (.....)
19. Plutonic igneous rock. (.....)
20. Surface igneous rock. (.....)
21. Atomic group carries three negative charges. (.....)
22. Gas that has a neutral effect on litmus paper. (.....)
23. Liquid nonmetal. (.....)
24. Fatal (lethal) mutation in humans. (.....)
25. Scavenger. (.....)
26. A hereditary trait in humans (.....)

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 8

1 Choose the correct answer:

- The colour of both the red and blue litmus strips does not change when dipped in.....
 - a ammonium chloride solution
 - B sodium chloride solution
 - C sodium carbonate solution
 - D potassium hydroxide solution
- The following formulas are for salts, except.....
 - a Ag_2CO_3
 - B AgCl
 - C $AgNO_3$
 - D Ag_2O
- The following anions can form salts, except.....
 - a nitrate anion
 - B sulphide anion
 - C hydroxide anion
 - D phosphate anion
- What is the possible pH meter reading of dilute sodium hydroxide solution?
 - a 2
 - B 5
 - C 7
 - D 12

2 Complete the following statements :

- The pH value of acids isthan 7, while inis greater than 7
- or is the measuring unit of distance and displacement.
- When magnesium hydroxide dissolves in water, it forms and
- Oxygenated acids are those that contain element, such asand.....
- The bronze alloy is used in manufacturing and.....

3 put (✓) or (x) for each statement :

- The metallic bond exists between atoms of different metals.
- An element whose outermost energy level containing two electrons is a metal.
- The total charge of molecules of any compound equals zero.

4 Write the scientific term or define the following as required:

- Mutation that occurs naturally, without human intervention (.....)
- Mutation :
- Mutation that is made by human intervention (.....)
- Basic oxide :

5 Various questions

1 Cross out the odd word

1. Graphite - Bromine - Phosphorus – Sulphur
2. Eggs – tomato – grapes – lemon
3. Sodium chloride - Calcium chloride - Magnesium chloride - Silver nitrate
4. N_2 – H_2O - H_2 – HCl
5. Iodine - Sulfur - Carbon – Hydrogen
6. Universal indicator - litmus paper - voltameter - pH Meter
7. Time - Mass - Speed - Distance
8. Erosion - Evaporation - Precipitation - Infiltration
9. Basalt - Natural gas - Coal - Petroleum oil.
10. Herbivores - Decomposers - Carnivores - Scavengers.
11. Gold - Silver - Bromine - Mercury.
12. Quartz mineral - Hornblende mineral - Iron mineral - Feldspar mineral
13. Plant root growth - Sedimentation - Water flow - Wind blowing

2 Two element (a, b) have melting point of (1538 – 115.21) respectively

1- What is the type of each one of them? And why?

.....

2- Which one of them is a good conductor of electricity?

.....

3-Which one of them is malleable and ductile?

.....

6 Give a reason for the following :

Increasing the work required to stop a moving car at a high speed.

.....

7 What happens if ...?

Increase in the number of primary consumers .

.....

تم تحميل هذه الأوراق مجاناً من أكبر وأضخم مكتبة تعليمية موقع وتطبيق مذكرات جاهز

Section 9

1 Choose the correct answer:

- 2 Among the basic gases.....
 - a CO₂ b HCl c NH₃ d CH₄
- 2 The carbonate group differs from the sulphite group in.....
 - a charge b number of atoms c number of elements d type of elements
- 3 What is the acid that its accumulation in the muscles causes the muscle cramps ?
 - a Hydrochloric acid b Lactic acid c Acetic acid d Chlorous acid
- 4 Which of the following substances, when dissolved in water, the percentage of H⁺ ions in the solution increases ?
 - a KOH b HBr c NH₃ d NaCl

2 Complete the following statements :

- 1 Water vapour condenses and turns into, droplets of water upon thermal energy, while ice melts turning into liquid water upon thermal energy.
- 2 Types of weathering include weathering and weathering.
- 3 Hydrobromic acid is composed ofcation andanion.
- 4 The molecular formula of nickel chloride salt is
- 5 The potential energy of an object depends on and.....

3 put (✓) or (x) for each statement :

- 1 Magnesium has lower melting point than sodium.
- 2 Pure gold metal is harder than gold alloys.
- 3 Acids can react with sodium hydroxide solution.

4 Write the scientific term or define the following as required:

- 1 The sum of the potential and the kinetic energies of any moving object. (.....)
- 2 pH meter :
- 3 Cohesive rocks formed from the lithification of sediments. (.....)
- 4 Fossil fuel :

5 Various questions

1 Correct the underlined words :

- Melting process is the reverse of condensation process.
- The scientist Tatum is considered the founder of genetics.
- Oxygen flows among living organisms in food chains.
- Work has the same unit of measurement as force.
- Harmful mutations cause the appearance of desirable traits.
- Production of wheat plants resistant to wheat rust disease is from spontaneous harmful mutations.
- Limestone is composed of sodium sulphate
- The nutritional relationship which results in harm to both individuals is mutualism
- Dependent variables remain constant throughout the experiment.
- When magnesium hydroxide dissolves in water, it forms hydrogen ion and magnesium ion.
- The strength of the metallic bond increases with increasing the number of neutrons.
- Distilled water has a basic effect and does not change the color of litmus paper.
- At the midpoint of the vertical distance between the falling point of a ball and the ground surface, the ratio of kinetic energy to potential energy equals 1:2.
- Each gene consists of a sequence of proteins.
- From causes of mechanical weathering the growth of plant leaves within rock cracks.
- The individual harmed in the predation is called the host.
- Dissolving magnesium in water forms magnesium hydroxide.
- Histones are carbohydrates.
- CuSO₄ salt is green in colour and dissolves in water.

6 Give a reason for the following :

Nitric acid turns blue litmus paper into red.

.....

.....

7 What happens if ...?

Placing potassium carbonate solution in water

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيقات مذكرات جاهزة

Section 10

1 Choose the correct answer:

- 1 The strength of alkalis is indicated by.....
 - a their conductivity of electricity
 - b the number of OH⁻ groups in them
 - c their dissolution in water
 - d the number of elements that form them
- 2 The nitrite atomic group is entered in the composition of.....
 - a nitrous acid
 - b nitric acid
 - c pernitrous acid
 - d hyponitric acid
- 3 Sulphur is similar to iron in that both of them
 - a are electrical conductors
 - b are solids
 - c are ductile
 - d have the same electron configuration
- 4 Among the malleable and formable elements are.....
 - a copper and aluminum
 - b copper and phosphorus
 - c aluminum and phosphorus
 - d sulphur and carbon

2 Complete the following statements :

- 1 The bronze alloy is characterized by being more than copper and.....to rust
- 2 The molecular formula of the carbonate group is, while the molecular formula of the sulphate group is
- 3 The atoms of solid metals are arranged in a structure known as
- 4 The stomach secretes that helps in
- 5 The salinity of the.....sea is about.....times that of the Red Sea

3 put (✓) or (x) for each statement :

- 1 Lithium and sulphur can be differentiated by electrical conductivity.
- 2 Quartzite is harder than sandstone.
- 3 Quartzite is formed by the transformation of claystone.

4 Write the scientific term or define the following as required:

- 1 Rocks formed from the slow cooling of magma in the cracks of the Earth's crust. (.....)
- 2 Genetics :
- 3 Consumers that feed on plants and animals. (.....)
- 4 Centromere :

5 Various questions

1 State the importance of Gravity in the water cycle in nature

.....

.....

2 State the importance of Water

.....

.....

3 Mention one use for Calcium carbonate powder

.....

.....

4 Mention the type of food relationship between the falcon that hunts mice.

.....

.....

5 What is the benefit of Litmus paper

.....

.....

6 What is the benefit of Stomach acid

.....

.....

6 Give a reason for the following :

Increasing the work required to stop a moving car at a high speed.

.....

.....

7 What happens if ...?

Placing two red and blue litmus paper in a tube of hydrogen gas.

.....

.....

1 Choose the correct answer:

1 Element (X) its boiling point is 184°C and its melting point is 113°C Which of the following is a property of element (X) ?

- a Shiny
- b Good conductor of heat
- c Formable
- d Bad conductor of electricity

2 What is the gas which comprises more than 90% of natural gas?

- a Carbon dioxide
- b Chlorine
- c Nitrogen
- d Methane

3 What is the process that the plants carry out in the water cycle?

- a Condensation
- b Evaporation
- c Precipitation
- d Transpiration

4 Which of the following is the correct arrangement of the hardness magnesium Mg₁₂ and aluminum Al₁₃ ?

- a Na > Mg > Al
- b Al > Mg > Na
- c Mg > Na > Al
- d Al > Na > Mg

2 Complete the following statements :

1 The elements are bad conductors of heat and electricity except which is a good conductor of electricity.

2 If a force of 200 N acts on a car and does not move it from its position, the work done on It equals

3 Producers obtain energy from while the obtain their energy from producers.

4 In the conversion processes of the matter, and processes occur at any temperature, while the process occurs at a certain temperature.

5 The number of chromosomes in human skin cell is..... chromosomes.

3 put (✓) or (x) for each statement :

1 Water cycle in nature is a closed multi-path cycle.

2 The minerals in rocks expand at night due to the decrease in temperature.

3 Limestone is a sedimentary rock that is corroded by acidic rains.

4 Write the scientific term or define the following as required:

1 Chemical weathering that leads to the formation of spheres of rocks. (.....)

2 PH :

3 A vital process aims to produce new individuals resembling their parents. (.....)

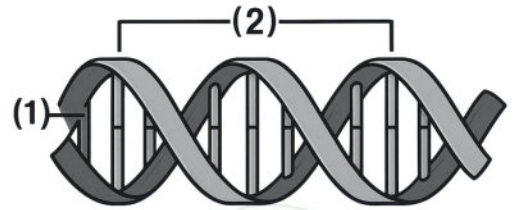
5 Various questions

1 In the provided diagram

identify what the numbers represent:

1:

2:



2 From the opposite figure :

1-What does this figure represent?

.....

2-What are the two processes represented by the letters (A) and (B)?

A-

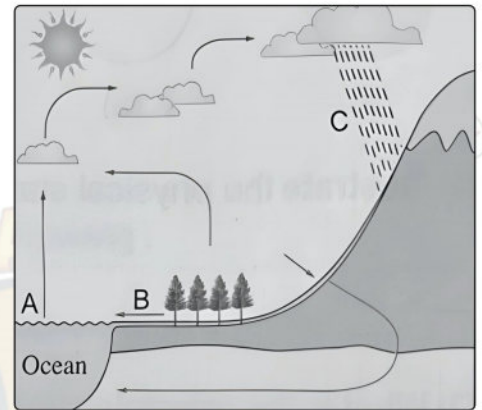
B-.....

3-What is the force causing process (C)?

.....

4-What is the importance of understanding natural processes?

.....



3 Replace the numbers indicated in the energy pyramid with the appropriate organisms from the following : (Small fish - Predatory fish - Birds - Crustaceans - Algae)

(1).....

(2).....

(3).....

(4).....

(5).....



6 Give a reason for the following :

Sodium chloride salt is an ionic compound.

.....
.....

7 What happens if ...?

Placing two red and blue litmus paper in a tube containing ammonia gas.

.....
.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهز

Section 12

1 Choose the correct answer:

- 1 The process that precedes condensation directly in the natural water cycle is
 a surface runoff B evaporation C infiltration D precipitation
- 2 Copper is a component of the bronze alloy, its percentage is.....
 a 5% B 15% C 65% D 95%
- 3 From the rocks that is formed due to the exposure to extreme pressure and heat is.....
 a quartzite B claystone C pumice D gabbro
- 4 The liquid element which is bad conductor of heat and electricity is.....
 a bromine B chlorine C mercury D lithium

2 Complete the following statements :

- 1 Each stage in which energy is transferred in the food chain is called.....
- 2 Carnivorous animals such as..... and are characterized by having sharp canines to.....their prey.
- 3 There are many indicators, such as litmus paper and
- 4 The measuring unit of kinetic energy is and is equal to
- 5 The more the mass of the object, the the speed when the kinetic energy is constant

3 put (✓) or (x) for each statement :

- 1 The principle of desalination relies on the processes of evaporation and condensation.
- 2 Claystone resulting from compaction and lithification.
- 3 The hot springs of Yellowstone National Park are a good example of mechanical weathering.

4 Write the scientific term or define the following as required:

- 1 A liquid element with metallic luster (.....)
- 2 Oxide :
- 3 The shortest straight path connecting between the starting point and the end point in a constant direction. (.....)
- 4 Host :

5 Various questions

1 Write the chemical formula for the following compounds:

1. Hydro sulphuric acid (.....)
2. Hydrobromic acid (.....)
3. Hydrochloric acid (.....)
4. Sulphuric acid (.....)
5. Sulphurous acid (.....)
6. Nitric acid (.....)
7. Nitrous acid (.....)
8. Potassium hydroxide (.....)
9. Atomic group consisting of three elements (.....)
10. Phosphoric acid (.....)
11. Ammonium hydroxide (.....)

2 State the number which indicates each of the following:

1. The percentage of water in the human body. (.....)
2. The percentage of water in Earth's composition. (.....)
3. The percentage of salt water compared to the percentage of water on Earth's surface. (.....)
4. The percentage of energy transferred when moving from any trophic level to the next level in the energy pyramid. (.....)
5. The percentage of methane gas in the natural gas composition. (.....)

6 Give a reason for the following :

Bronze alloy is used in the manufacture of medals instead of copper.

.....

.....

7 What happens if ...?

A person who suffers from lactose intolerance eats milk chocolate

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جازم

Section 13

1 Choose the correct answer:

- 1 The remains of marine microorganism transform after millions of years in the Earth's interior into
 a granite B limestone C petroleum oil D coal
- 2 The correct name of the compound $(NH_4)_3PO_4$ is.....
 a ammonium phosphide B ammonium phosphate C nitrogen phosphide D nitrogen phosphate
- 3 When lava cools, it forms a rock called
 a gabbro B pumice C granite D sandstone
- 4 The combination of hydrogen with each of the following nonmetals produces acids,except.....
 a chlorine B bromine C oxygen D iodine

2 Complete the following statements :

- 1 If the speed of the body increases into three times, its kinetic energy increases into times of its value.
- 2 The ecosystem consists of several levels: the individual,, and
- 3 is the individual that benefits from commensalism.
- 4 Dissolving of in water forms magnesium hydroxide.
- 5 Limestone is a Rock, while marble is a Rock

3 put (✓) or (x) for each statement :

- 1 Energy flows from consumers to producers in the food web.
- 2 Inherited traits passed from offspring to parents.
- 3 Water evaporates upon losing heat.

4 Write the scientific term or define the following as required:

- 1 It inters in the composition of the bronze alloy with a small percentage. (.....)
- 2 Nucleotides :
- 3 Water stored beneath the Earth's surface. (.....)
- 4 Precipitation :

5 Various questions

1 Problems:



(1) Calculate the amount of energy that transfers to the snake that is a tertiary consumer in a food chain, if the amount of energy at the first trophic level is 1000 energy units.

IMPORTANT

(2) Calculate the potential energy of a body with a mass of 15 kg at a height of 150 cm. (knowing that the acceleration due to gravity is 10 N/kg)

(3) Calculate the mass of an object with kinetic energy 0.5 kJ moving at a speed of 5 m/s.

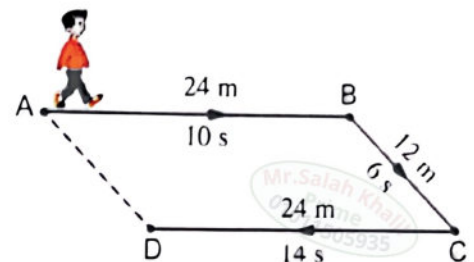
(4) Calculate the mechanical energy of a moving object if its kinetic energy is 40J and its potential energy is 30 J.

(5) In the opposite figure, a person moved from point (A) to point (D). Calculate:

1- The distance travelled by the person.

2- The displacement.

3- The speed at which this person moved.



تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهز

Section 14

1 Choose the correct answer:

- 1 Histones are
 a enzymes b proteins c fats d carbohydrates
- 2 The solution with pH equals 1 is
 a strong alkali b weak alkali c strong acid d weak acid
- 3 pH of acid rains can be equals
 a 5 b 7 c 9 d 11
- 4 Which of the following obtain energy from the other three types?
 a Producers b Decomposers c Carniyores d Herbivores

2 Complete the following statements :

- 1 A change in the pH value of a solution from 7 to 12 means it was and become
- 2 The freezing of water in rock crackes is one of the causes of the Weathering
- 3 spherical weathering is a form of the weathering
- 4 The acid that contains ClO_2^- group has the molecular formula
- 5 alkali that contains NH_4^+ group has the molecular formula

3 put (✓) or (x) for each statement :

- 1 Chromosomes are found in threads shape inside the nucleus.
- 2 When lifting heavy objects, the load should be on the leg muscles rather than the back.
- 3 Decomposers in food chains recycle the nutrients to the ecosystem.

4 Write the scientific term or define the following as required:

- 1 Removing salt from seawater. (.....)
- 2 Harmful mutation :
- 3 Each gene makes one enzyme for a trait. (.....)
- 4 Erosion :

5 Give a reason for the following :

The curling up of hedgehog when it feels danger is classified as instinctive behaviour

Not all salt solutions are neutral

Hyenas are a scavengers

6 What happens if ...?

When the cloud temperature is below freezing point

Increasing pressure on rock sediments.

The exposure of sandstone to extreme pressure and heat.

1 Choose the correct answer:

- 1 Acids can contain the following atomic groups, except
 a carbonate group b sulphate group c nitrate group d hydroxide group
- 2 The amount of energy lost when moving from any trophic level to the next level in the energy pyramid equals
 a 1% b 10% c 90% d 100%
- 3 All the following acids are strong, except
 a nitric acid b acetic acid c sulphuric acid d hydrochloric acid
- 4 Among the organisms that feed on the bodies of dead organisms are.....
 a hyenas b fungi c cockroaches d foxes

2 Complete the following statements :

- 1 Sources of water vapor in nature include, and of human & animal
- 2 Nucleotides exist in the form of twisted around each other.
- 3 The scientists and arrived at a working hypothesis for expressing genetic traits and called it
- 4 Igneous rocks are classified according to their locations of into igneous rocks and igneous rocks.
- 5 The presence of and materials in groundwater cause chemical weathering.

3 put (✓) or (x) for each statement :

- 1 An individual inherits half of its genetic material from the father and the other half from the mother.
- 2 Each stage in which energy is transferred in the food chain is called trophic level.
- 3 The speed of pendulum ball is zero when it passes through its original position.

4 Write the scientific term or define the following as required:

- 1 Use organisms instead of pesticides. (.....)
- 2 Consumers :
- 3 Rock changes chemically (.....)
- 4 Genes :

5 Give a reason for the following :

Fresh water consumption must be rationalized

Sea and ocean water are desalinated

The bow and arrow game is an example of energy conversion

6 What happens if ...?

Small ice crystals gather during thunderstorms.

The cloud temperature is below freezing point.

A difference in the order of nucleotides in a single chromosome

1 Choose the correct answer:

1is the scientist who developed pH scale to differentiate between acidic, basic and neutral solutions.

- a** Arrhenius **B** Soren Sorensen **C** Newton **D** Mendel

2 River deltas are formed as a result of process.

- a** crystallization **B** chemical weathering **C** melting **D** erosion

3 Production of featherless chickens is considered.....mutation.

- a** spontaneous **B** lethal **C** induced **D** harmful

4 The product of multiplying the mass of the object and the Earth's gravitational field intensity is.....

- a** speed **B** work **C** weight **D** potential energy

2 Complete the following statements :

1 The volume of water when it freezes in the cracks of rocks causing weathering

2 The and.....are the two main factors maintain the continuity of the water cycle in nature.

3 The process is the reverse of the freezing process .

4 The evaporation process is the reverse of the process.

5 Freezing and condensation are two processes that occur when heat.

3 put (✓) or (x) for each statement :

1 The decrease in potential energy is followed by a decrease in kinetic energy.

2 The pH value of the neutral solutions and distilled water is 7.

3 Naming of the salt begins with the name of the cation followed by the name of the anion.

4 Write the scientific term or define the following as required:

1 Sediments settle in layers. (.....)

2 Sediments :

3 Potential + kinetic energy (.....)

4 Prey :

5 Give a reason for the following :

Thermal expansion and contraction of the minerals that make up rocks.

Boiling point is a characteristic property of a pure substance, not of evaporation.

Producing cube-shaped watermelons is an agricultural technique, not a mutation.

6 What happens if ...?

Container filled with water up to its edge and placed in the refrigerator for several hours.

An increase in the number of primary consumers

Decomposers disappear from the ecosystem.

1 Choose the correct answer:

- 1 The following substances have pH greater than 7, except.....
 - a oven cleaners b calcium hydroxide solution c ammonia solution d grape juice
- 2 All the following are alkaline substances, except.....
 - a Soap b Toothpaste c Potassium hydroxide d Ketchup
- 3is the various populations of different species that inhabit the same environment.
 - a Individual b Biotic population c Biological community d Ecosystem
- 4 Herbivores are.....
 - a producers b scavengers c consumers d decomposers

2 Complete the following statements :

- 1 enzyme is responsible for occurrence of a that leads to the formation of a that expresses a specific trait.
- 2 Genetic material is found in the of prokaryotic organisms and in the nuclei of organisms.
- 3 The energy of water is used in operating turbines to generate from the High Dam.
- 4 When a ball falls vertically downwards, the decreases
- 5 The variable is the variable to be tested, which changes in response to changing the variable

3 put (✓) or (x) for each statement :

- 1 The salinity of the Dead Sea is almost 10 times higher than that of the Red sea.
- 2 Alkalis don't react with each other.
- 3 The name of the acid is related to the name of the cation which composes it.

4 Write the scientific term or define the following as required:

- 1 Metal oxides forming alkalis (.....)
- 2 Acidic oxides :
- 3 Shows acid / alkali strength (.....)
- 4 Indicators :

5 Give a reason for the following :

Mendel is considered the founder of genetics

DNA is known as a double helix.

A demolition ball is an example of energy conversion

6 What happens if ...?

The height of the object above the surface of the ground is doubled with constant weight.
(Regarding its potential energy)

A moving car covers the same distance it travelled in half the time. (Regarding its speed)

Placing litmus strips in a solution whose pH is 11.

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 18

1 Choose the correct answer:

- Which of the following questions helps in the classification of some elements to metals and nonmetals?
 - a Is it solid?
 - B Is it liquid?
 - C Is it coloured?
 - D Is it brittle?
- All the following form ions that form salts, except.....
 - a OH⁻
 - B Cl⁻
 - C NH₄⁺
 - D NO₃⁻
- Millions of nucleotides come together directly, forming.....
 - a chromosome
 - B chromatids
 - C genes
 - D histones
- In a food chain that includes insect, fish, plant and swan. Which of these living organisms is considered as a predator and a prey at the same time?
 - a The insect
 - B The fish
 - C The plant
 - D The swan

2 Complete the following statements :

- Energy has various forms including energy and energy.
- chloride salt dissolve in water, whilechloride salt doesn't dissolve in water.
- From colored salts copper sulphate salt whose color is and the salt whose color is green.
- The strength of the acidic solution increases as its pH value approaches
- We can reduce soil acidity by adding materials such as

3 put (✓) or (x) for each statement :

- All carbonate salts do not dissolve in water.
- The potential energy of an object increases when its height decreases.
- Joule = Newton x Metre.

4 Write the scientific term or define the following as required:

- Increases OH⁻ in solution. (.....)
- Alloy :
- Attraction between metal ions and electrons (.....)
- Commensal :

5 Give a reason for the following :

The mechanical energy of a falling object remains constant

.....

.....

When a pendulum ball passes through the original position, its kinetic energy is at its maximum.

.....

.....

The work done by the car is less than that done by the truck, even if their speeds are equal

.....

.....

6 What happens if ...?

Fossil fuels burn in factories and cars.

.....

.....

Placing wet red and blue litmus paper in a tube of hydrogen gas.

.....

.....

Lactic acid accumulates in the muscles of the human body.

.....

.....

تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق مذكرات جاهزة

Section 19

1 Choose the correct answer:

- 1 The rock cycle is a model that illustrates.....
 - a the unchanging of rocks
 - b how magma is formed
 - c how sediments are formed
 - d transformations of rocks
- 2 What is the possible PH meter reading of dilute sodium hydroxide solution?
 - a 2
 - b 5
 - c 7
 - d 12
- 3 The centromere connects between.....
 - a two chromosomes
 - b two chromatids
 - c two genes
 - d two nucleotides
- 4 The molecular formula of sulphurous acid is
 - a H_2SO_3
 - b H_2S
 - c H_2SO_4
 - d HSO_3

2 Complete the following statements :

- 1 The combustion of fossil fuels producesoxides such as
- 2 Acids react with alkalis forming and
- 3 Nitric acid is a acid, while nitrous acid is a acid.
- 4 ions are responsible for all the properties of the acids .
- 5 ions are responsible for all the properties of the alkalis

3 put (✓) or (x) for each statement :

- 1 The chain consists of several overl ad food webs.
- 2 Magma takes a long time to crystallize, hence forming rocks with large crystals.
- 3 The nutritional relationship between lion and tiger is a predation.

4 Write the scientific term or define the following as required:

- 1 the variable that you keep the same (.....)
- 2 Path of movement :
- 3 A group of similar organisms (.....)
- 4 Distance :

5 Give a reason for the following :

A person pushing against a wall does not perform work.

The acidity of grapes is stronger than that of tomatoes.

The pH meter is more accurate than universal strips

6 What happens if ...?

Combination of positive hydrogen cation with a negative bromide anion.

Dissolution of sulphur oxide in rainwater.

Putting a piece of sugar in a test tube containing sulphuric acid.

تم تحميل هذه الأوراق مجاناً من أكبر وأفضل مكتبة تعليمية موجهة وتطبيقات مذكرات جاهزة

Section 20

1 Choose the correct answer:

- 1 All the following physical quantities are measured in joules, except for.....
 - a potential energy B force C work D kinetic energy
- 2 Genes control the appearance of hereditary traits in the living organism by producing
 - a hormones B enzymes C chromosomes D vitamins
- 3 Which of the following rocks is used after being crushed to make casts ?
 - a Gabbro B Limestone C Sandstone D Pumice
- 4 The spider weaving its web is considered.....
 - a a spontaneous mutation B an acquired trait C a genetic trait D an instinctive behaviour

2 Complete the following statements :

- 1 Lactic acid provides the muscles with energy during their lack of
- 2 When dissolves in water, it produces hydrogen cation and chloride anion.
- 3 The bicarbonate group carry charge, and its molecular formula is
- 4 graphite which is a good conductor of
- 5 Each chromosome carries thousands or millions of

3 put (✓) or (x) for each statement :

- 1 The number of H⁺ ions equals the number of OH⁻ ions in distilled water
- 2 Acidic soil is treated with adding basic substances to it such as HCl.
- 3 Bromine is a liquid element with metallic luster.

4 Write the scientific term or define the following as required:

- 1 Hold DNA (.....)
- 2 Instinctive behaviors :
- 3 Level in food chain (.....)
- 4 Acquired traits :

5 Give a reason for the following :

Acid rains cause an imbalance in aquatic ecosystems.

Litmus paper is not suitable for distinguishing between strong and weak acids.

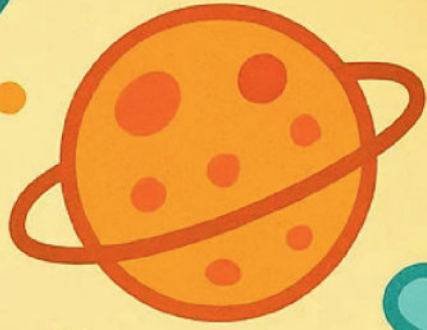
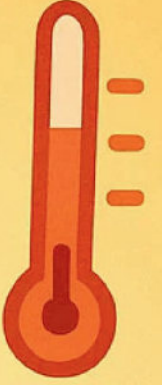
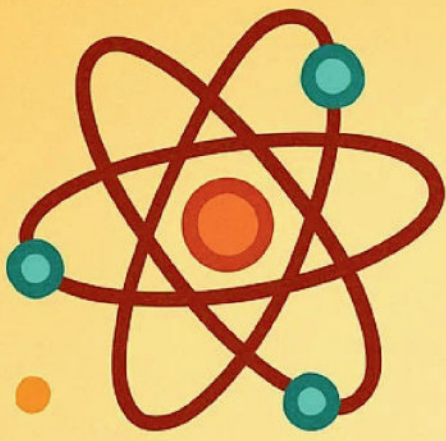
Hydrochloric acid is a strong acid, while acetic acid is a weak acid

6 What happens if ...?

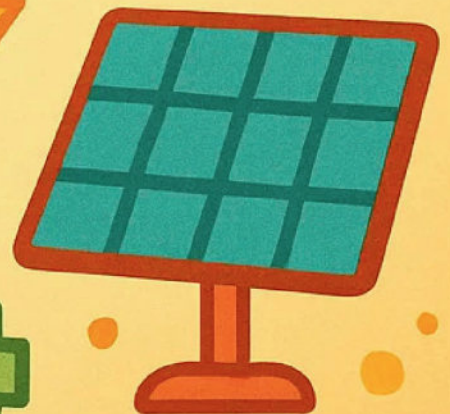
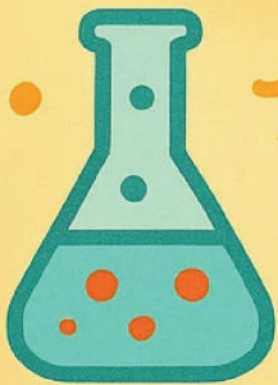
Acids react with alkalis

Force is halved & displacement is doubled (work)

Vehicle exceeds speed limits



Model answers



تم تحميل هذه الأوراق مجاناً من
أكبر وأضخم مكتبة تعليمية
موقع وتطبيق. مذكرات جاهزة

model answers

Section 1

1 Choose the correct answer:

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

2 Complete the following :

1. beneficial
2. mendel - pea
3. nucleotide
4. dish washing liquid - table
salt - water
5. ground

3 put (✓) or (x) :

1. x
2. x
3. ✓

4 Write the scientific term :

- 1-Acidic oxides
- 2- Ion with multiple atoms/elements
- 3-Speed

5 Various questions

(1)

1-

Litmus indicator:

- Tells us if something is an acid, alkali, or neutral.
- Acid turns blue paper red.
- Alkali turns red paper blue.
- Neutral does not change the color.

Universal indicator:

- Shows how strong the acid or alkali is.
- Gives different colors based on pH.
- Helps compare strong and weak acids or alkalis.

2-

Commensal and host:

- The commensal benefits, and the host is not harmed or helped.

Predator and prey:

- The predator benefits by eating, and the prey is harmed or killed.

6 Give a reason for the following :

- because hot springs contain minerals that react with rocks, leading to chemical weathering.

7 What happens if ...?

- water will freeze and expand which lead to bottle brusting

Section 2

1 Choose the correct answer:

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

2 Complete the following :

1. nonmetals
2. solids - mercury
3. copper - 5%
4. oxygenated – non -oxygenated
5. hydrogen sulphide - hydrosulpharic acid

3 put (✓) or (x) :

1. x
2. x
3. x

4 Write the scientific term :

- 1-Potential energy
- 2-It is the ability to do work

5 Various questions

(1)

1. It has pores and fossils inside the sediments.
2. It eats plants and animals.
3. Red litmus turns blue.
4. The object moves in the same direction of the force.

(2)

1. When the temperature rises during the day, minerals expand, and when it drops at night, they contract ,this causes rocks to break.
2. Ladybugs eat aphids, which are harmful insects to vegetables and fruits.
3. The Dead Sea has a lot of salt, so its density is high, and people can't drown in it.
4. Desalination of seawater uses evaporation and condensation to remove salts and make fresh drinking water.

6 Give a reason for the following :

- because it carries large amounts of sediments like gravel, sand, clay and silt

7 What happens if ...?

- when water freeze it expand and lead to mechanical weathering

Section 3

1 Choose the correct answer:

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

2 Complete the following :

1. acidic - basic
2. plant - microorganisms
3. metamorphic
4. genetic
5. plutonic - surface

3 put (✓) or (x) :

1. ✓
2. ✓
3. x

4 Write the scientific term :

- 1-Salts
- 2-Rain with dissolved acidic gases
- 3-Movement path
- 4-It is a single living organism that belongs to a specific species

5 Various questions

(1)

1- Basalt rock – Granite rock

Basalt: Formed by lava cooling on Earth's surface.

Granite: Formed by magma cooling under Earth's crust.

2- Melting – Evaporation

Melting: Solid changes to liquid.

Evaporation: Liquid changes to gas.

3- Copper – Sulphur

Copper: Formable (can be shaped).

Sulphur: Non-formable.

4- Biological community – Ecosystem

Biological community: Different living groups in the same place.

Ecosystem: Living things + non-living things (water, air, soil).

(2)

$$1. V = d/t$$

$$2. KE = 0.5mv^2$$

6 Give a reason for the following :

- it's beneficial is formation of river delta , it's harmful is coastal erosion

7 What happens if ...?

- Thermal expansion occurs and lead to mechanical weathering

Section 4

1 Choose the correct answer:

1. b
2. d
3. b
4. c

2 Complete the following :

1. harmful - muscular dystrophy
2. liquid - solid - gas
3. neutral - alkaline
4. nonmetal - liquid
5. Ph meter

3 put (✓) or (x) :

1. ✓
2. x
3. ✓

4 Write the scientific term :

- 1-Bio community
- 2- path of energy moves from one organism to another
- 3-Decomposers
- 4-Linked food chains - It is the interconnection and overlapping of multiple food chains.

5 Various questions

(1)

- 1- Aluminum > Magnesium > Sodium.
- 2- Sand > Silt > Clay.

(2)

- 1- Because it gives the same colour with both of them.
- 2- Hydrochloric acid / Because it is a strong acid.

(3)

1-

Acquired traits:

Traits learned from the environment, not inherited, and not passed to the next generation.

Genetic traits:

Traits that are inherited from parents and passed on without learning.

2-

- Hydrogen chloride: HCl in the gas state.
- Hydrochloric acid: HCl in solution (in water), behaves as an acid.

6 Give a reason for the following :

- because it contain large amounts of spaces between sediments

7 What happens if ...?

- breaking of rocks and releasing of carbon dioxide (chemical weathering)

Section 5

1 Choose the correct answer:

1. b
2. c
3. d
4. d

2 Complete the following :

1. 7
2. $H_2 - O_2$
3. host
4. species
5. herbivores - incisors

3 put (✓) or (x) :

1. ✓
2. x
3. ✓

4 Write the scientific term :

- 1-Kinetic energy
- 2-Liquid water becomes gas.
- 3-Boiling
- 4-Water moves between air and Earth in a cycle.

5 Various questions

(1)

- 1- Has large crystals.
- 2- This person does not have side effects from milk or dairy.
- 3- Changes red litmus to blue.
- 4- Has metallic luster, and is malleable, ductile, and formable.

(2)

- 1- Gregor Mendel.
- 2- Soren Sorensen.

(3)

- 1- Limestone rock (Sedimentary rock).
- 2- It transforms into metamorphic rock (marble).

6 Give a reason for the following :

- because when mass increases, kinetic energy increase, work done increase

7 What happens if ...?

- turnoff due to releasing of carbon dioxide

Section 6

1 Choose the correct answer:

1. b
2. b
3. d
4. d

2 Complete the following :

1. strong - nitrous
2. salt
3. 60 km
4. force - displacement
5. directly - speed

3 put (✓) or (x) :

1. ✓
2. x
3. ✓

4 Write the scientific term :

- 1-Rocks
- 2-Mix of two or more metals
- 3-Recycling
- 4-Plants release water vapor.

5 Various questions

(1)

1-Magma eruption / Formation of igneous rock / Weathering and erosion / Compaction and lithification / Formation of sedimentary rock.

2- Sodium hydroxide > Distilled water > Tomatoes > Hydrochloric acid.

(2)

1- Responsible for expressing the hereditary traits in living organisms.

2- Used in jewellery.

(3)

1- Breaking the hazelnut shell

2- Wind blowing.

6 Give a reason for the following :

- pressing the brakes, will decreases the speed , thus decreases the kinetic energy

7 What happens if ...?

- leads to competition between individuals of the same species, which negatively affects their growth or survival.

Section 7

1 Choose the correct answer:

1. b
2. c
3. d
4. d

2 Complete the following :

1. water - air
2. omnivores - bear - mouse
3. producers - heterotrophic
4. increases - decreases
5. producers - decomposers - bacteria - fungi

3 put (✓) or (x) :

1. x
2. x
3. x

4 Write the scientific term :

- 1-sediments
- 2-Attraction between metal ions and electrons
- 3-Condensation

5 Various questions

(1)

- 1 – Adding it to table sugar causes the sugar to char (turn black).
- 2 – The object moves in the same direction as the force.

(2)

- | | |
|--|---|
| 1. (NH_4^+) | 2. OH^- |
| 3. Carbon dioxide | 4. Ammonia gas |
| 5. Sodium carbonate (Na_2CO_3) | 6. Copper sulphate (CuSO_4) – blue |
| 7. Copper sulphate (CuSO_4) | 8. Calcium sulphate (CaSO_4) |
| 9. Hydrogen | 10. Universal indicator |
| 11. Hydrochloric Acid (HCl) | 12. Hydrochloric Acid (HCl) |
| 13. Phosphoric Acid (H_3PO_4) | 14. Lactic Acid |
| 15. The formation of the agricultural soil over millions of years in Egypt | |
| 16. HCl | |
| 17. Acetic acid | |
| 18. Sodium hydroxide | |
| 19. Granite | |
| 20. Pumice | |
| 21. Phosphate | |
| 22. H_2 gas | |
| 23. Bromine | |
| 24. Muscular dystrophy | |
| 25. Hyenas | |
| 26. Eye colour | |

Section 8

1 Choose the correct answer:

1. b
2. d
3. c
4. d

2 Complete the following :

1. less – bases
2. meter - kilometer
3. positive magnesium - negative hydroxide
4. oxygen - H_2SO_4 - H_2CO_3
5. medals - jewelry

3 put (✓) or (x) :

1. x
2. ✓
3. ✓

4 Write the scientific term :

- 1-Spontaneous mutation
- 2-New trait from gene change.
- 3-Induced mutation
- 4-Metal oxides, some of which dissolve in water forming alkalis.

5 Various questions

(1)

- | | |
|-------------------|------------------|
| 1. Graphite | 2. Eggs |
| 3. Silver nitrate | 4. HCl |
| 5. Hydrogen | 6. Voltmeter |
| 7. Mass | 8. Erosion |
| 9. Basalt | 10. Decomposers |
| 11. Bromine | 12. Iron mineral |
| 13. Sedimentation | |

(2)

- 1:
- Element (a) with melting point $1538^{\circ}C$ is a metal, because it has a very high melting point, which is a typical property of metals.
 - Element (b) with melting point $-115.21^{\circ}C$ is a non-metal, because it has a very low melting point, which is common for non-metals.
- 2: Element (a) is a good conductor, because metals conduct electricity well.
- 3: Element (a) is malleable and ductile, because these are properties of metals, and element (a) is a metal.

6 Give a reason for the following :

- bec when speed increases, kinetic energy increases, work done increases

7 What happens if ...?

- The number of producers decreases. Or The number of secondary consumers increases

Section 9

1 Choose the correct answer:

1. c
2. d
3. b
4. b

2 Complete the following :

1. lose – gain
2. mechanical - chemical
3. H^+ - Br^-
4. $NiCl_2$
5. weight - height

3 put (✓) or (x) :

1. x
2. x
3. ✓

4 Write the scientific term :

- 1-Mechanical energy
- 2-A device used to measure the pH value of solutions directly and accurately.
- 3-Sedimentary rocks
- 4-The fuel formed in the Earth's interior.

5 Various questions

(1)

- | | |
|-----------------------|-----------------------|
| 1. Freezing | 2. Mendel |
| 3. Energy | 4. Weight |
| 5. Beneficial | 6. induced beneficial |
| 7. calcium carbonate | 8. competition |
| 9. Controlled | |
| 10. Hydroxide | |
| 11. valence electrons | |
| 12. neutral | |
| 13. 1:1 | |
| 14. Nucleotides | |
| 15. Roots | |
| 16. Prey | |
| 17. magnesium oxide | |
| 18. proteins | |
| 19. $NiCl_2$ | |

6 Give a reason for the following :

- Due to the presence of hydrogen cations

7 What happens if ...?

- causes it to dissolve and release potassium cations (K^+) and carbonate anions (CO_3^{2-}).

Section 10

1 Choose the correct answer:

1. a
2. a
3. b
4. a

2 Complete the following :

1. hard - resistant
2. $\text{CO}_3 - \text{SO}_4$
3. crystal lattice
4. hydrochloric - food digestion
5. dead - 10

3 put (✓) or (x) :

1. ✓
2. ✓
3. x

4 Write the scientific term :

- 1-Plutonic igneous rock
- 2-Study of inherited traits.
- 3-Omnivores
- 4-The central point at which the two chromatids of the chromosome are connected.

5 Various questions

(1)

It causes water to return back to earth through precipitation process

(2)

Drinking — agricultural — sanitation - hygiene

(3)

Used in making the casts used for patients with bone fractures

(4)

Predation

(5)

To differentiate between acids and alkali as acids turn litmus paper into red, while alkali turns litmus paper into blue

(6)

Participate in Food digestion.

6 Give a reason for the following :

- Because the car which moves at high speed has large kinetic energy.

7 What happens if ...?

- The colour of litmus paper doesn't change

Section 11

1 Choose the correct answer:

1. d
2. d
3. d
4. b

2 Complete the following :

1. nonmetals - graphite
2. zero
3. sun - consumers
4. condensation - evaporation - boiling
5. 46

3 put (✓) or (x) :

1. ✓
2. x
3. ✓

4 Write the scientific term :

- 1-Spherical weathering
- 2-Scale 0–14 to show acidity/basicity
- 3-Reroduction

5 Various questions

(1)

- 1-Nucleotide
- 2- gene

(2)

1- The water cycle in nature.

2-

- (A): The evaporation process.
- (B): Surface runoff.

3-The gravitational force.

4-It helps to predict changes in natural processes in the future.

(3)

1. Algae.
2. Crustaceans.
3. Small fish.
4. Predatory fish.
5. Birds.

6 Give a reason for the following :

- Because it is produced from reaction between alkali (sodium cation) and acid (chloride anion)

7 What happens if ...?

- It changes the colour of wet litmus paper will be blue

Section 12

1 Choose the correct answer:

1. b
2. d
3. a
4. a

2 Complete the following :

1. trophic level
2. lion - snake - bear
3. universal indicator
4. Joule - kg x(m/s)^2
5. slower

3 put (✓) or (x) :

1. ✓
2. ✓
3. x

4 Write the scientific term :

- 1-Mercury
- 2-A compound formed when an element burns in the presence of oxygen.
- 3-Displacement
- 4-Individual that not harmed , not helped

5 Various questions

(1)

- | | |
|-----------------------------|----------------------------|
| 1. H_2S | 2. HBr |
| 3. HCl | 4. H_2SO_4 |
| 5. H_2SO_3 | |
| 6. HNO_3 | |
| 7. HNO_2 | |
| 8. KOH | |
| 9. HCO_3 | |
| 10. H_3PO_4 | |
| 11. NH_4OH | |

(2)

1. (70 %)
2. (71 %)
3. (97 %)
4. (10 %)
5. (more than 90 %)

6 Give a reason for the following :

- Because bronze alloy is harder than copper and resistant to rusting

7 What happens if ...?

- This person feels crampy and suffers from nausea and other painful symptoms

Section 13

1 Choose the correct answer:

1. c
2. b
3. b
4. c

2 Complete the following :

1. 9
2. biotic population - biological community
3. commensal
4. magnesium oxide
5. sedimentary - metamorphic

3 put (✓) or (x) :

1. x
2. x
3. x

4 Write the scientific term :

- 1-Tin
- 2-The smallest building units of nucleic acid DNA
- 3-Groundwater
- 4-Rain, snow, or hail falling from clouds.

5 Various questions

(1)

1-The amount of energy that transfers to:

- 2nd trophic level (1ry consumer) = $1000 \div 10 = 100$ energy units.
- 3rd trophic level (2ry consumer) = $100 \div 10 = 10$ energy units.
- 4th trophic level (3ry consumer - snake) = $10 \div 10 = 1$ energy units.

2-

- Height = $150 \div 100 = 1.5$ m.
- PE = $m \times g \times h = 15 \times 10 \times 1.5 = 225$ J.

3-

Kinetic energy (KE) = $0.5 \times 1000 = 500$ J. \ m = 40kg.

4-

ME = KE + PE = $40 + 30 = 70$ J.

5-

1-d=AB+BC+CD ; d = $244+12+24 = 60$ m

2- s=AD=12m

3-t=6+10+14=30s , V = $60 \div 30 = 2$ m/s

Section 14

1 Choose the correct answer:

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

2 Complete the following :

1. neutral - alkaline
2. mechanical
3. chemical
4. HClO_2
5. NH_4OH

3 put (✓) or (x) :

1. ✓
2. ✓
3. ✓

4 Write the scientific term :

- 1-Desalination
- 2-Bad trait or causes disease
- 3-One gene-one enzyme
- 4- Moving sediments from one place to another.

5 Give a reason for the following :

- (1) Because it is a behavior that is transmitted from parents to offspring without learning
- (2) Because some salt solutions are acidic (like ammonium chloride) and others are alkaline (like sodium carbonate).
- (3) Because it feeds on the remains of dead organisms

6 What happens if ...?

- (1) Snow precipitate instead rain
- (2) Compaction and lithification of sediments into layers forming sedimentary rocks.
- (3) Transformation of sandstone into quartzite.

Section 15

1 Choose the correct answer:

1. d
2. c
3. b
4. b

2 Complete the following :

1. water bodies - transpiration - sweat
2. two strands
3. beadle - tatum - (one gene - one enzyme)
4. solidification - plutonic - surface
5. acids - mineral

3 put (✓) or (x) :

1. ✓
2. ✓
3. x

4 Write the scientific term :

- 1-Biological control
- 2-Eat producers or other consumers
- 3-Chemical weathering
- 4-DNA parts that control traits.

5 Give a reason for the following :

- (1) To ensure sustainability of fresh water in future
- (2) To face shortage of fresh water suitable for drinking, irrigation and agriculture
- (3) Because drawing the arrow stores potential energy, which converts to kinetic energy when released.

6 What happens if ...?

- (1) Formation of hail.
- (2) Snow precipitates instead of rain.
- (3) leads to differences in the genes it carries, which results in variations in the hereditary traits each gene expresses.

Section 16

1 Choose the correct answer:

1. b
2. d
3. c
4. c

2 Complete the following :

1. increase - mechanical
2. sun - gravity
3. melting
4. condensation
5. losing

3 put (✓) or (x) :

1. x
2. ✓
3. ✓

4 Write the scientific term :

- 1-Sedimentation
- 2-Broken rock particles
- 3-Mechanical energy
- 4-The one that is harmed

5 Give a reason for the following :

- (1) Due to the difference in temperature between day and night.
- (2) because boiling happens at a specific temperature, while evaporation can occur at any temperature.
- (3) because they grow in square molds that shape them without altering their genetic makeup.

6 What happens if ...?

- (1) It will break due to the increase in the volume of water upon freezing.
- (2) leads to a decrease in producers and an increase in secondary consumers.
- (3) Dead bodies will accumulate without decomposition so nutrients can't be recycled to the ecosystem.

Section 17

1 Choose the correct answer:

1. d
2. d
3. c
4. c

2 Complete the following :

1. chemical reaction - protein - hereditary
2. cytoplasm - eukaryotic
3. kinetic - electricity
4. potential energy
5. dependent - independent

3 put (✓) or (x) :

1. ✓
2. ✓
3. x

4 Write the scientific term :

- 1-Basic oxides
- 2-Nonmetal oxides forming acids
- 3-Universal indicator
- 4-Change color in acid/base

5 Give a reason for the following :

- (1) because his experiments on pea plants led him to conclude that each hereditary trait is controlled by a pair of genetic factors, later called genes.
- (2) Because it consists of 2 strands twisted around each other.
- (3) because its stored potential energy is transformed into kinetic energy used for demolition.

6 What happens if ...?

- (1) Potential energy increases to double.
- (2) The speed increases to double.
- (3) The colour of the red strip turns blue.

Section 18

1 Choose the correct answer:

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

2 Complete the following :

1. potential - kinetic
2. Nickel - Silver
3. blue - nickel chloride
4. zero
5. basic - calcium hydroxide

3 put (✓) or (x) :

1. x
2. x
3. ✓

4 Write the scientific term :

- 1-Alkali
- 2-Mix of two or more metals
- 3-Metallic bond
- 4-The one that benefits

5 Give a reason for the following :

- (1) because the decrease in potential energy is equal to the increase in kinetic energy.
- (2) Because its speed is at its maximum.
- (3) because the car has less mass, and kinetic energy increases with greater mass.

6 What happens if ...?

- (1) releasing acidic oxides like nitrogen dioxide (NO_2) and sulfur dioxide (SO_2).
- (2) The colour of the indicator doesn't change.
- (3) It causes muscle cramps.

Section 19

1 Choose the correct answer:

1. d
2. d
3. b
4. a

2 Complete the following :

1. acidic - nitrogen dioxide
2. salts - water
3. strong - weak
4. hydrogen
5. hydroxide

3 put (✓) or (x) :

1. x
2. ✓
3. x

4 Write the scientific term :

- 1-Controlled variables
- 2-The route taken during motion
- 3-Species
- 4-Total path traveled

5 Give a reason for the following :

- (1) Because the displacement equals zero.
- (2) Because the pH value of grapes is lower than pH value of tomatoes.
- (3) because it gives a direct and immediate digital reading, while universal strips only provide an approximate pH value.

6 What happens if ...?

- (1) Formation of hydrobromic acid (HBr).
- (2) Formation of acid rain.
- (3) It makes the table sugar to be charred (becomes black).

Section 20

1 Choose the correct answer:

1. b
2. b
3. b
4. d

2 Complete the following :

1. oxygen
2. hydrochloric acid
3. one negative - HCO_3^-
4. electricity
5. genes

3 put (✓) or (x) :

1. ✓
2. x
3. x

4 Write the scientific term :

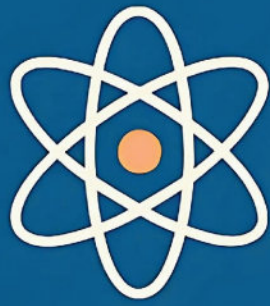
- 1-Chromosomes
- 2-Born with these behaviors
- 3-Trophic level
- 4-Learned from the environment

5 Give a reason for the following :

- (1) Because acid rains fall on water bodies harm the living organisms which live in it.
- (2) Because it gives the same colour with both of them.
- (3) because hydrochloric acid conducts electricity well, whereas acetic acid conducts electricity poorly.

6 What happens if ...?

- (1) Salt and water form
- (2) Work stays the same
- (3) Road accidents increase.



G

B

Learning science
is fun

Discover, explore,
and imagine
with every page.



A

