

AISSEE General Science

Sample Paper – 3

Duration: 30 Minutes

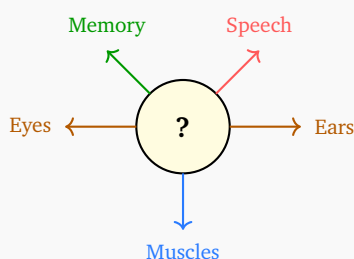
Maximum Marks: 50

Instructions

- This paper has **25 questions** carrying **2 marks** each. Total: **50 marks**.
- All questions are MCQs with four options (A/B/C/D). Choose the single correct answer.
- **No negative marking**. Wrong or blank answers carry zero marks.
- Attempt all questions. Do not leave any answer blank.

Section A: Human Body

Q1. The diagram shows signals travelling between an organ and various parts of the body. Which organ, labelled ?, acts as the *control centre* of the human body?



- (A) Heart
- (B) Liver
- (C) Brain
- (D) Stomach

Answer: (C)

Solution

The **brain** is the control centre of the human body. It receives signals from all sense organs, processes information, stores memories, and sends commands to muscles and other organs through the nervous system.



Q2. Which type of teeth are sharp and chisel-shaped, found at the front of the mouth, and used for *cutting* food into smaller pieces?

- (A) Incisors
- (B) Canines
- (C) Molars
- (D) Premolars

Answer: (A)

Solution

Incisors are the four flat, sharp teeth at the very front of each jaw used for cutting food. **Canines** are pointed teeth used for tearing. **Premolars** and **molars** are at the back and are used for grinding and crushing.

Q3. In the urinary system, which organ *stores* urine after it is produced by the kidneys, until it is expelled from the body?

- (A) Urinary bladder
- (B) Kidney
- (C) Urethra
- (D) Liver

Answer: (A)

Solution

The **urinary bladder** is a muscular bag that stores urine. The **kidneys** filter blood and produce urine. The **urethra** is the tube through which urine leaves the body. The **liver** is not part of the urinary system.



Q4. Sound waves travel through the ear canal and first cause which part to vibrate, starting the process of hearing?

- (A) Cochlea
- (B) Eardrum (tympanic membrane)
- (C) Semicircular canals
- (D) Pinna

Answer: (B)

Solution

Sound waves hit the **eardrum (tympanic membrane)** first, making it vibrate. These vibrations pass through three tiny bones (ossicles) to the **cochlea**, which converts vibrations into nerve signals sent to the brain. The **pinna** (outer ear) funnels sound in.

Q5. Which type of joint is found at the shoulder and hip, allowing movement in all directions including full rotation?

- (A) Ball-and-socket joint
- (B) Hinge joint
- (C) Fixed joint
- (D) Pivot joint

Answer: (A)

Solution

A **ball-and-socket joint** (shoulder, hip) allows movement in all directions. A **hinge joint** (elbow, knee) allows movement in one plane only, like a door hinge. A **fixed joint** (skull) allows no movement. A **pivot joint** (neck) allows rotation.



Q6. Which teeth are large, flat, and broad, located at the back of the mouth, and are used for *grinding and crushing* food?

- (A) Molars
- (B) Incisors
- (C) Canines
- (D) Premolars

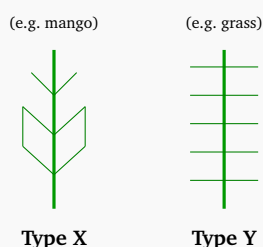
Answer: (A)

Solution

Molars are the largest back teeth with wide, ridged surfaces for grinding and crushing food. An adult human has 12 molars. **Premolars** also help with crushing but are smaller. **Incisors** cut; **canines** tear.

Section B: Plants and Animals

Q7. The diagram shows two types of leaf venation (vein patterns). Monocot plants such as grass and maize show which type?



- (A) Reticulate (Type X)
- (B) Pinnate
- (C) Palmate
- (D) Parallel (Type Y)

Answer: (D)

Solution

Monocot plants (grass, maize, wheat) have **parallel venation** (Type Y) — veins run side by side from base to tip. Dicot plants (mango, rose) have **reticulate venation** (Type X)



— veins form a net-like pattern. Venation type helps identify the plant class.

Q8. Inside a seed, there is a part that acts as a food store, providing nutrients to the embryo during germination. This part is called the:

- (A) Testa (seed coat)
- (B) Radicle
- (C) Plumule
- (D) Cotyledon

Answer: (D)

Solution

The **cotyledon** (seed leaf) stores food for the germinating seedling. The **testa** is the hard outer coat that protects the seed. The **radicle** is the embryonic root that grows downward. The **plumule** is the embryonic shoot that grows upward.

Q9. Which of the following is a *parasitic plant* that has no chlorophyll, wraps its yellow thread-like stem around a host plant, and absorbs water and nutrients directly from it?

- (A) Cuscuta (Amarbel)
- (B) Lotus
- (C) Banyan
- (D) Neem

Answer: (A)

Solution

Cuscuta (dodder / amarbel) is a parasitic plant. It has no chlorophyll and cannot make its own food. It attaches to a host plant using haustoria (suckers) and steals water and nutrients. Lotus, banyan, and neem all make their own food by photosynthesis.



Q10. Algae are simple, plant-like organisms that have chlorophyll but lack true roots, stems, and leaves. Where are they found in the largest numbers?

- (A) Hot sandy deserts
- (B) Dense tropical forests
- (C) High mountain tops
- (D) Ponds, lakes, and seas

Answer: (D)

Solution

Algae are aquatic plants found in greatest numbers in **ponds, lakes, rivers, and seas**. They range from tiny single-celled forms (like *Chlamydomonas*) to large seaweeds. They form the base of aquatic food chains by producing oxygen through photosynthesis.

Q11. A potted plant placed near a window gradually bends its stem towards the light source. This directional growth response of a plant towards light is called:

- (A) Hydrotropism
- (B) Geotropism
- (C) Phototropism
- (D) Thigmotropism

Answer: (C)

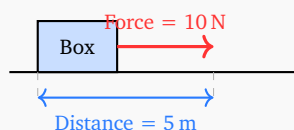
Solution

Phototropism is the growth of a plant towards (positive) or away from (negative) light. **Hydrotropism** is growth towards water. **Geotropism** (gravitropism) is growth in response to gravity — roots grow downward. **Thigmotropism** is growth in response to touch (e.g. vine tendrils).

Section C: Force, Motion, and Simple Machines



Q12. The diagram shows a box being pushed along the floor. Using the formula **Work = Force × Distance**, how much work is done?



- (A) 2 J
- (B) 15 J
- (C) 25 J
- (D) 50 J

Answer: (D)

Solution

Work done = Force × Distance = $10\text{ N} \times 5\text{ m} = 50\text{ J}$ (joules). Work is done only when a force moves an object through a distance in the direction of the force. If the object does not move, no work is done even if force is applied.

Q13. The law of conservation of energy states that energy:

- (A) Can be created from nothing if enough heat is applied
- (B) Cannot be created or destroyed — it can only be changed from one form to another
- (C) Can be destroyed when used up in a machine
- (D) Always increases in the universe over time

Answer: (B)

Solution

The **law of conservation of energy** states that the total energy of an isolated system remains constant — energy **cannot be created or destroyed**, only converted between forms (e.g. electrical energy in a bulb converts to light and heat energy). This is one of the most fundamental laws of physics.



Q14. A heavy rock rests at the top of a hill. It is not moving, but it has the ability to do work if it rolls down. The energy stored in the rock because of its raised *position* is called:

- (A) Kinetic energy
- (B) Chemical energy
- (C) Potential energy
- (D) Sound energy

Answer: (C)

Solution

Potential energy (gravitational) is the energy stored in an object due to its height above the ground. When the rock rolls down, this potential energy converts to **kinetic energy** (energy of motion). A stretched spring also has potential energy (elastic).

Q15. Which simple machine consists of two or more toothed wheels (cogs) that mesh together, used in clocks, bicycles, and car engines to transfer and change the speed or direction of motion?

- (A) Pulley
- (B) Lever
- (C) Inclined plane
- (D) Gear

Answer: (D)

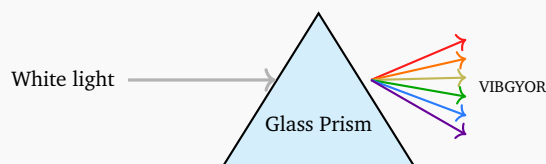
Solution

A **gear** is a simple machine made of toothed wheels that interlock. Gears can change the speed, direction, or force of motion. A small gear turning a large gear reduces speed but increases force. Gears are used in bicycles, watches, and car gearboxes.

Section D: Light, Sound, Heat, and Chemistry



Q16. The diagram shows white light passing through a glass prism and separating into a band of colours (VIBGYOR). What is this process called?



- (A) Reflection
- (B) Refraction
- (C) Dispersion
- (D) Absorption

Answer: (C)

Solution

Dispersion is the splitting of white light into its component colours (VIBGYOR: Violet, Indigo, Blue, Green, Yellow, Orange, Red) by a prism. It happens because different colours of light bend by different amounts. A rainbow is a natural example of dispersion by water droplets.

Q17. The unit used to measure the *loudness* of sound is:

- (A) Hertz (Hz)
- (B) Decibel (dB)
- (C) Newton (N)
- (D) Watt (W)

Answer: (B)

Solution

The **decibel (dB)** measures loudness (intensity) of sound. Normal conversation is about 60 dB; a jet engine is about 140 dB. **Hertz (Hz)** measures the frequency (pitch) of sound. Sounds above 85 dB can damage hearing with prolonged exposure.



Q18. Railway engineers leave small gaps between metal rails. On a hot day the rails expand and fill the gaps without buckling. This property of solids to *increase in size* when heated is called:

- (A) Thermal conduction
- (B) Thermal convection
- (C) Thermal expansion
- (D) Thermal radiation

Answer: (C)

Solution

Thermal expansion is the increase in size of a material when its temperature rises, because particles vibrate faster and move further apart. Metals expand more than most materials. Gaps in railway tracks, bridges, and concrete roads are left to allow for this expansion.

Q19. Which of the following correctly describes properties that are common to most metals?

- (A) They are shiny (lustrous) and good conductors of heat and electricity
- (B) They are dull in appearance and poor conductors of electricity
- (C) They are transparent and allow light to pass through them
- (D) They are soft and can be easily snapped by hand

Answer: (A)

Solution

Most **metals** are **shiny (lustrous)**, **good conductors** of heat and electricity, malleable (can be beaten into sheets), and ductile (can be drawn into wires). Non-metals are generally dull, poor conductors, and brittle. Copper, iron, and aluminium are examples of metals.



Q20. When solid wax is heated it melts to liquid, and when cooled the liquid wax solidifies again. What do these changes of state tell us about heat and matter?

- (A) Matter is created when a solid melts
- (B) Heat energy is needed to change a solid to liquid, and heat must be removed to change liquid back to solid
- (C) The amount of matter increases when a substance is heated
- (D) Metals remain solid at all temperatures

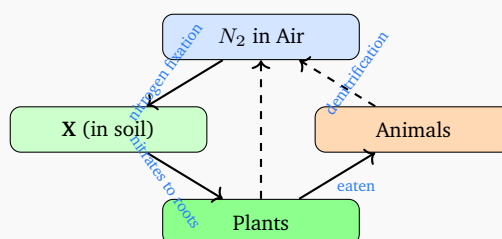
Answer: (B)

Solution

Melting (solid $\rightarrow$ liquid) requires heat energy to be *added*. **Freezing/solidification** (liquid $\rightarrow$ solid) requires heat energy to be *removed*. Similarly, **evaporation** needs heat and **condensation** releases heat. The mass of matter does not change during these physical changes.

Section E: Environmental Science

Q21. The diagram shows a simplified nitrogen cycle. Atmospheric nitrogen (N_2) cannot be used directly by most plants. Which group of organisms, shown at step X, converts it into compounds that plants can absorb through their roots?



- (A) Fungi
- (B) Algae
- (C) Nitrogen-fixing bacteria
- (D) Earthworms



Answer: (C)

Solution

Nitrogen-fixing bacteria (such as *Rhizobium* in root nodules of legumes) convert atmospheric N_2 into ammonia and nitrates that plants can absorb. Without these bacteria, plants could not access nitrogen, which is essential for making proteins and DNA.

Q22. When a plant or animal dies, its body is broken down into simpler mineral substances that enrich the soil. The organisms (mainly bacteria and fungi) that perform this process are called:

- (A) Decomposers
- (B) Producers
- (C) Primary consumers
- (D) Parasites

Answer: (A)

Solution

Decomposers (bacteria and fungi) break down dead organic matter into simple inorganic substances, returning nutrients to the soil for plants to reuse. Without decomposers, dead matter would pile up and nutrients would not be recycled. **Producers** make food; **consumers** eat it.

Q23. Soil is a mixture of mineral particles, humus, water, air, and organisms. The mineral particles in soil are formed over thousands of years by the weathering and gradual breaking down of:

- (A) Rainwater
- (B) Air
- (C) Dead plant roots only
- (D) Rocks

Answer: (D)



Solution

Soil is formed by the weathering of **rocks** over thousands of years. Physical weathering (wind, water, temperature changes) breaks rocks into smaller fragments. Chemical weathering further breaks them down into mineral particles. Organic matter (humus) from decayed plants and animals mixes with these particles to form fertile soil.

Q24. Which of the following natural disasters is caused by a sudden release of energy in Earth's crust, resulting from the movement of tectonic plates along a fault line?

- (A) Flood
- (B) Earthquake
- (C) Drought
- (D) Cyclone

Answer: (B)

Solution

An **earthquake** is caused by the sudden movement or slipping of tectonic plates, releasing seismic (shock) waves. A **volcano** is also linked to plate boundaries. **Floods** are caused by heavy rain or overflowing rivers. **Droughts** are caused by lack of rainfall. **Cyclones** are caused by warm ocean-air systems.

Q25. Oil spills in the ocean are a major form of pollution. They are particularly harmful to seabirds and fish mainly because:

- (A) Oil lowers the ocean water temperature sharply
- (B) Oil coats feathers and skin, and clogs gills, preventing normal breathing and movement
- (C) Oil increases the salt content of the water
- (D) Oil adds extra oxygen that is toxic to marine animals

Answer: (B)



Solution

Oil spills harm marine life in several ways: oil **coats the feathers** of seabirds, destroying insulation and causing them to drown or freeze; oil **clogs the gills** of fish, preventing breathing; it also poisons animals that swallow it and destroys habitats. Cleaning up oil spills is extremely difficult and expensive.

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	C	2	A	3	A	4	B	5	A
6	A	7	D	8	D	9	A	10	D
11	C	12	D	13	B	14	C	15	D
16	C	17	B	18	C	19	A	20	B
21	C	22	A	23	D	24	B	25	B

