

AISSEE General Science

Sample Paper – 9

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 appendix, a small pouch attached to the large intestine, is an example of a:

- (A) Vital organ essential for digestion
- (B) Vestigial organ with no known essential function
- (C) Gland that produces digestive enzymes
- (D) Muscle that moves food through the intestine

Answer: (B)

Solution

The **appendix** is a **vestigial organ** – a structure that has lost most or all of its original function through the course of evolution. In humans it is a small, finger-shaped pouch attached to the large intestine and serves no essential digestive role.

Q2. What is the main function of the *gallbladder* in the human body?

- (A) Produce insulin to regulate blood sugar
- (B) Store bile produced by the liver
- (C) Filter waste from the blood
- (D) Pump blood around the body

Answer: (B)



Solution

The **gallbladder** stores **bile**, a digestive fluid produced by the liver. When fatty food enters the small intestine, bile is released from the gallbladder to help digest and absorb fats. The pancreas produces insulin; the kidneys filter blood; the heart pumps blood.

Q3. Which blood vessels supply oxygenated blood directly to the *muscle of the heart itself*?

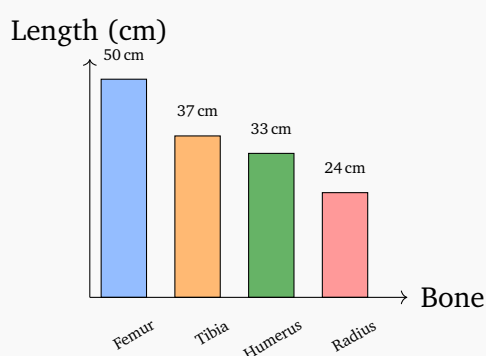
- (A) Pulmonary arteries
- (B) Renal arteries
- (C) Carotid arteries
- (D) Coronary arteries

Answer: (D)

Solution

The **coronary arteries** branch off the aorta and supply oxygenated blood to the heart muscle itself. A blockage in a coronary artery cuts off this supply and causes a **heart attack**. Pulmonary arteries carry deoxygenated blood to the lungs; renal arteries go to the kidneys; carotid arteries supply the brain.

Q4. The bar chart shows the approximate lengths of four bones in an adult human. Which bone is the *longest* in the human body?



- (A) Femur (thigh bone)
- (B) Tibia (shin bone)
- (C) Humerus (upper arm bone)
- (D) Radius (forearm bone)



Answer: (A)

Solution

The **femur** (thigh bone) is the **longest and strongest** bone in the human body, averaging about 50 cm in an adult. It connects the hip to the knee and bears the body's weight when standing and walking.

Q5. The *tonsils* are masses of tissue at the back of the throat that help trap germs entering through the mouth and nose. The tonsils are part of which body system?

- (A) Lymphatic (immune) system
- (B) Digestive system
- (C) Nervous system
- (D) Endocrine system

Answer: (A)

Solution

The **tonsils** are lymphatic organs – masses of lymphoid tissue that act as the body's first line of defence against pathogens inhaled or swallowed. They are part of the **lymphatic system**, which fights infection. The digestive system processes food; the nervous system transmits signals; the endocrine system produces hormones.

Q6. Which part of the human brain is the largest and is responsible for thinking, memory, and voluntary movement?

- (A) Cerebellum
- (B) Medulla oblongata
- (C) Cerebrum
- (D) Hypothalamus

Answer: (C)

Solution

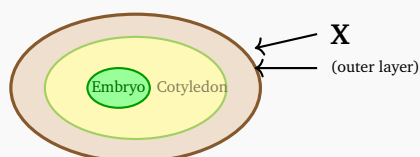
The **cerebrum** is the largest part of the brain and controls thinking, memory, language, and voluntary actions. The **cerebellum** maintains balance and coordination;



the **medulla oblongata** controls involuntary actions such as breathing and heartbeat; the **hypothalamus** regulates body temperature and hunger.

Section B: Plants and Animals

Q7. The diagram shows a cross-section of a seed. Which part, labelled **X**, forms the outer covering that protects the seed and prevents it from drying out?



- (A) Seed coat (testa)
- (B) Cotyledon
- (C) Embryo
- (D) Endosperm

Answer: (A)

Solution

The **seed coat** (testa) is the tough outer covering of a seed. It protects the embryo from physical damage, drying out, and attack by microorganisms. The **cotyledon** stores food for the germinating seedling; the **embryo** is the tiny undeveloped plant inside.

Q8. Strawberry plants spread by sending out long horizontal stems along the ground. Where these stems touch the soil, new plants grow. Potato plants form underground swollen stems that develop into new plants. These are examples of:

- (A) Reproduction by spores
- (B) Vegetative reproduction (by runners and tubers)
- (C) Sexual reproduction by seeds
- (D) Reproduction by grafting

Answer: (B)



Solution

Vegetative reproduction is a form of asexual reproduction in plants using non-reproductive parts. **Runners** (as in strawberries), **tubers** (as in potatoes), and **bulbs** (as in onions) are common methods. No seeds or flowers are involved; the new plant is genetically identical to the parent.

Q9. Ferns and mosses do *not* produce flowers or seeds. Instead, they reproduce by releasing tiny, dust-like structures called:

- (A) Pollen grains
- (B) Spores
- (C) Bulbs
- (D) Cuttings

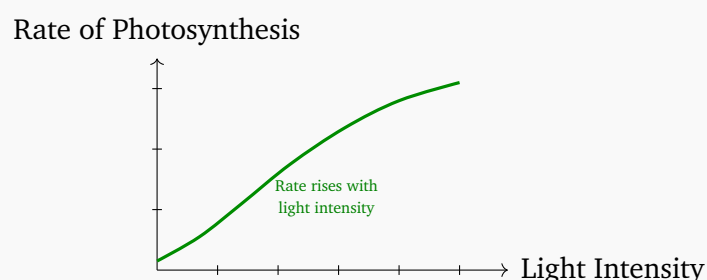
Answer: (B)

Solution

Ferns and mosses are **non-flowering plants** that reproduce using **spores** – tiny single cells released into the air. Each spore can grow into a new plant under suitable conditions. Pollen grains are produced by flowering plants; bulbs and cuttings are methods of vegetative reproduction.



Q10. The graph shows how the rate of photosynthesis in a leaf changes as light intensity increases. What happens to the rate of photosynthesis as light intensity increases (in the region shown)?



- (A) It decreases steadily
- (B) It stays the same (unchanged)
- (C) It increases
- (D) It suddenly drops to zero

Answer: (C)

Solution

As **light intensity increases**, more light energy is available for photosynthesis, so the **rate of photosynthesis increases**. At very high intensities the rate levels off because other factors (such as CO_2 concentration or temperature) become limiting. Light is one of the three key factors that affect photosynthesis rate.

Q11. Leaves have tiny pores called stomata through which gases (CO_2 and O_2) and water vapour pass. Which specialised cells surround each stoma and control its opening and closing?

- (A) Mesophyll cells
- (B) Epidermal cells
- (C) Xylem cells
- (D) Guard cells

Answer: (D)

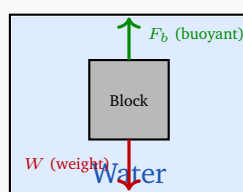


Solution

Each stoma is surrounded by a pair of **guard cells**. When guard cells absorb water they swell and curve, **opening** the pore. When they lose water they become flaccid and the pore **closes**. This allows the plant to control gas exchange and water loss (transpiration).

Section C: Force, Motion, and Simple Machines

Q12. The diagram shows a block submerged in water. According to **Archimedes' principle**, the upward buoyant force (F_b) acting on the block equals:



- (A) The weight of the block
- (B) The volume of the block
- (C) The weight of the water displaced by the block
- (D) The density of the water

Answer: (C)

Solution

Archimedes' principle states that the **buoyant force** on a submerged object equals the **weight of the fluid it displaces**. This is why objects that displace a large weight of water (e.g. large ships) float, even if they are made of dense material. This principle explains floating and sinking.



Q13. Hydraulic brakes in a car and hydraulic lifts in a garage work on the principle that:

- (A) Solids transmit force in all directions
- (B) Gases expand when compressed
- (C) Heat makes liquids expand
- (D) Pressure applied to a confined fluid is transmitted equally in all directions

Answer: (D)

Solution

Hydraulic machines use **fluid pressure**. Pascal's law states that pressure applied to a confined liquid is transmitted undiminished in all directions. A small force on a small piston creates pressure that is transmitted through liquid to a large piston, producing a much larger force. This multiplies effort in hydraulic brakes and lifts.

Q14. A knife, an axe blade, and a needle are all examples of which simple machine? They work by converting a downward force into two outward forces that *split* or *pierce* a material.

- (A) Lever
- (B) Pulley
- (C) Inclined plane (ramp)
- (D) Wedge

Answer: (D)

Solution

A **wedge** is a simple machine that has a thick end and a thin edge. When force is applied to the thick end, the wedge converts it into forces directed sideways, splitting or piercing objects. Examples include knives, axes, chisels, nails, and needles. A wedge is essentially a *moving* inclined plane.



Q15. An astronaut has a mass of 70 kg on Earth. She travels to the Moon, where gravity is about one-sixth of Earth's gravity. What is the astronaut's *mass* on the Moon?

- (A) About 12 kg (one-sixth of 70 kg)
- (B) About 35 kg (half of 70 kg)
- (C) 70 kg (unchanged)
- (D) Zero kg (no gravity means no mass)

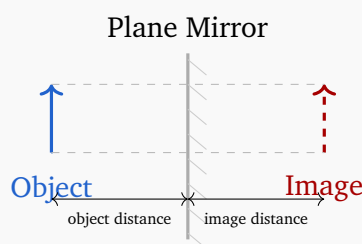
Answer: (C)

Solution

Mass is the amount of matter in an object – it does **not** change with location. The astronaut's mass remains **70 kg** on the Moon. **Weight** is the force of gravity on that mass ($W = mg$), so her weight *would* be about one-sixth of her Earth weight (≈ 115 N instead of 686 N). Mass and weight are different quantities.

Section D: Light, Sound, Heat, and Chemistry

Q16. The diagram shows an object placed in front of a plane (flat) mirror. Which statement correctly describes the image formed?



- (A) Real, magnified, and inverted
- (B) Virtual, magnified, and upright
- (C) Real, same size, and upright
- (D) Virtual, same size, and laterally inverted

Answer: (D)



Solution

A plane mirror forms an image that is: **virtual** (cannot be formed on a screen – it appears to be behind the mirror), **same size** as the object, at the same distance behind the mirror as the object is in front, and **laterally inverted** (left and right are swapped, as seen when reading text in a mirror).

Q17. Materials can be classified based on how light passes through them. Which of the following materials is *transparent* – meaning light passes through it clearly and you can see objects distinctly on the other side?

- (A) Wood
- (B) Brick
- (C) Cardboard
- (D) Glass

Answer: (D)

Solution

Glass is **transparent** – light passes through it clearly, allowing objects to be seen distinctly. **Translucent** materials (like tracing paper) allow some light through but scatter it, so images are blurred. **Opaque** materials (wood, brick, cardboard) do not allow light to pass through at all and form shadows.

Q18. The *density* of a substance tells us how much mass is packed into a given volume. Which formula correctly gives the density of a substance?

- (A) $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$
- (B) $\text{Density} = \frac{\text{Volume}}{\text{Mass}}$
- (C) $\text{Density} = \text{Mass} \times \text{Volume}$
- (D) $\text{Density} = \text{Mass} + \text{Volume}$

Answer: (A)

Solution

Density = $\frac{\text{Mass}}{\text{Volume}}$, measured in kg/m^3 or g/cm^3 . A substance with high density has



a lot of mass packed into a small volume (e.g. iron sinks in water because its density, $\approx 7900 \text{ kg/m}^3$, is much greater than water's 1000 kg/m^3).

Q19. Iron ore is mined from the earth. It contains iron combined with rock, sand, and other minerals. Iron ore is an example of a:

- (A) Pure element
- (B) Pure compound
- (C) Mixture
- (D) Solution

Answer: (C)

Solution

Iron ore is a **mixture** – it contains iron compounds mixed with other materials (rock and minerals) in varying proportions that are not chemically combined. A **pure element** contains only one type of atom; a **pure compound** contains elements in a fixed ratio; a **solution** is a homogeneous mixture (e.g. salt dissolved in water).

Q20. A student places a small dot of black ink near the bottom of a strip of paper and dips the lower end in water. The water rises up the paper and the ink spot separates into several bands of different colours. This method of separating a mixture of coloured substances is called:

- (A) Distillation
- (B) Chromatography
- (C) Filtration
- (D) Evaporation

Answer: (B)

Solution

Chromatography separates mixtures based on how strongly each component is attracted to a stationary phase (paper) versus a moving solvent (water). Different coloured dyes travel different distances, producing separate coloured bands. It is used in food dye testing, ink analysis, and forensic science. It does *not* use heat (unlike distillation or



evaporation).

Section E: Environmental Science

Q21. The term that describes the *variety of all living organisms* – including plants, animals, fungi, and microorganisms – found in a particular habitat or on the whole Earth is:

- (A) Biodiversity
- (B) Photosynthesis
- (C) Decomposition
- (D) Adaptation

Answer: (A)

Solution

Biodiversity is the variety of life on Earth at all levels – from genes to species to ecosystems. High biodiversity makes ecosystems more stable and resilient. Habitat destruction, pollution, and climate change are the main threats to biodiversity. India is one of 17 *mega-diverse* countries in the world.

Q22. In the African savanna, lions hunt and control the population of wildebeest and zebras. Without lions, these herbivores would overgraze and destroy the grassland, affecting all other species. A species that has such a large and crucial effect on its ecosystem is called a:

- (A) Producer species
- (B) Decomposer species
- (C) Keystone species
- (D) Invasive species

Answer: (C)

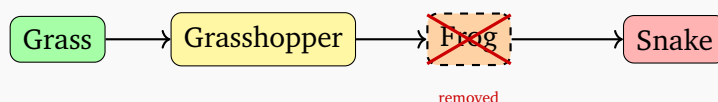
Solution

A **keystone species** is one whose impact on its ecosystem is disproportionately large relative to its abundance. Its removal causes dramatic changes – often collapse – of the



ecosystem. Examples include sea otters (controlling sea urchins), elephants (creating water holes), and wolves (controlling deer herds). Keystone species are vital for maintaining biodiversity.

Q23. The diagram shows a food chain. If *all the frogs* were suddenly removed from this ecosystem, what would **most likely** happen to the *grasshopper* population?



- (A) It would increase greatly (no predator to eat them)
- (B) It would decrease (they would starve)
- (C) It would stay exactly the same
- (D) It would immediately drop to zero

Answer: (A)

Solution

Frogs eat grasshoppers. If frogs are removed, there is no predator to control the grasshopper population, so **grasshoppers would increase greatly**. This would in turn cause the grass population to decrease (over-grazing), and snakes (which lose their food source) would also decrease. Removing one species disrupts the entire food chain.

Q24. “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” This is the definition of:

- (A) Rapid industrialisation
- (B) Sustainable development
- (C) Deforestation
- (D) Urbanisation

Answer: (B)



Solution

Sustainable development balances economic growth with environmental protection and social equity so that future generations can also meet their needs. It was defined in the 1987 Brundtland Report. Examples include using renewable energy, reducing waste, and protecting forests while still allowing economic progress.

Q25. Every year on **22 April**, people around the world participate in a global event to raise awareness about protecting the natural environment, fighting climate change, and promoting conservation. This annual event is called:

- (A) World Earth Day
- (B) World Environment Day
- (C) World Water Day
- (D) World Biodiversity Day

Answer: (A)

Solution

World Earth Day is observed every year on **22 April**. It was first celebrated in 1970 and is now observed in more than 190 countries. Its goal is to raise awareness about environmental issues such as climate change, deforestation, and pollution. (Note: *World Environment Day* is 5 June; *World Water Day* is 22 March.)

Answer Key

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

