

CUET PG 2026 B.Ed. Science Question Paper with Solutions(Memory Based)

Time Allowed :1 Hours 30 minutes	Maximum Marks :300	Total Questions :75
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General Instructions

1. The exam lasts 90 minutes (1 hour 30 minutes).
2. There are 75 Multiple Choice Questions (MCQs) to be answered.
3. +4 marks for every correct answer. -1 mark (negative marking) for every incorrect answer. 0 marks for unanswered or un-attempted questions.
4. For any discrepancy in questions, the English version is considered final (except for language-specific papers).
5. Click one of the four options to choose an answer.
6. You must click "Save & Next" to confirm your response. Only saved answers are considered for evaluation.
7. Use "Mark for Review & Next" to flag a question for later. You can unselect or change your answer using the "Clear Response" button.
8. All calculations must be done on the Rough Sheets provided at the centre. These must be returned to the invigilator after the exam.

1. Which of the following organelles is known as the "powerhouse of the cell"?

- (A) Nucleus
- (B) Mitochondria
- (C) Ribosome
- (D) Golgi apparatus

Correct Answer: (B) Mitochondria

Solution:

Step 1: Understanding the Concept:

The question asks to identify the specific cellular organelle that is primarily responsible for energy production in eukaryotic cells.

Step 2: Key Formula or Approach:

The approach is to evaluate the primary biological function of each listed organelle and identify which one is responsible for generating cellular energy in the form of ATP.

Step 3: Detailed Explanation:

Mitochondria are double-membrane-bound organelles found in most eukaryotic organisms.

They generate most of the cell's supply of adenosine triphosphate (ATP), which is used as a source of chemical energy.

Because of this crucial role in cellular respiration and energy generation, they are popularly referred to as the "powerhouse of the cell".

Let us review the other options for clarity.

The nucleus contains the genetic material and controls cellular activities.

Ribosomes are the cellular machinery responsible for protein synthesis.

The Golgi apparatus is involved in modifying, sorting, and packaging proteins for secretion.

Step 4: Final Answer:

Therefore, the correct organelle is Mitochondria.

💡 Quick Tip

Remember the key functions of major organelles: Nucleus (control center), Mitochondria (powerhouse/energy), Ribosomes (protein factories), and Golgi apparatus (packaging center).

2. What is the unit of measure for electrical resistance?

- (A) Volt
- (B) Ampere
- (C) Ohm
- (D) Watt

Correct Answer: (C) Ohm

Solution:

Step 1: Understanding the Concept:

Electrical resistance is a fundamental property that quantifies how much an object opposes the flow of electric current.

Step 2: Key Formula or Approach:

According to Ohm's law, resistance (R) is defined as the ratio of voltage (V) across an object to the current (I) flowing through it.

The formula is given by $R = \frac{V}{I}$.

Step 3: Detailed Explanation:

The standard SI unit for electrical resistance is the Ohm, which is symbolized by the Greek letter Omega (Ω).

One Ohm is defined as the resistance between two points of a conductor when a constant potential difference of one Volt produces a current of one Ampere.

Let us analyze the other units given in the options.

Volt is the standard unit of electrical potential or electromotive force.

Ampere is the standard unit of electrical current.

Watt is the standard unit of electrical power.

Step 4: Final Answer:

Thus, the unit of measure for electrical resistance is the Ohm.

💡 Quick Tip

To avoid confusion, memorize standard SI units: Current = Ampere (A), Voltage = Volt (V), Resistance = Ohm (Ω), Power = Watt (W).

3. Which gas is primarily responsible for the greenhouse effect on Earth?

- (A) Oxygen
- (B) Nitrogen
- (C) Carbon dioxide
- (D) Hydrogen

Correct Answer: (C) Carbon dioxide

Solution:

Step 1: Understanding the Concept:

The greenhouse effect is the natural process by which specific gases in a planet's atmosphere trap heat, keeping the planet warmer than it would otherwise be.

Step 2: Key Formula or Approach:

The approach is to identify which of the listed atmospheric gases absorbs and emits radiant energy within the thermal infrared range.

Step 3: Detailed Explanation:

Greenhouse gases allow sunlight to pass through the atmosphere but prevent the heat that the sunlight brings from leaving the atmosphere.

Carbon dioxide (CO_2) is the primary greenhouse gas emitted through human activities and is the main driver of the enhanced greenhouse effect.

Oxygen and Nitrogen make up the vast majority of Earth's atmosphere, but they are transparent to infrared radiation and therefore do not act as greenhouse gases.

Hydrogen is a trace gas and is not a significant contributor to the greenhouse effect on Earth.

Step 4: Final Answer:

Thus, Carbon dioxide is primarily responsible for the greenhouse effect among the given options.

 Quick Tip

Major greenhouse gases include Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), and Water vapor (H₂O).

4. In a plant cell, which structure provides rigidity and protection?

- (A) Cell membrane
- (B) Cell wall
- (C) Vacuole
- (D) Nucleus

Correct Answer: (B) Cell wall

Solution:

Step 1: Understanding the Concept:

Plant cells possess distinct structural components that differentiate them from animal cells and provide necessary mechanical support.

Step 2: Key Formula or Approach:

The approach is to distinguish between the cell boundaries of plants and animals to identify the rigid outer layer unique to plant cells.

Step 3: Detailed Explanation:

The cell wall is a rigid, structural layer situated just outside the cell membrane in plant cells. It is primarily composed of cellulose and is responsible for providing structural support, maintaining the cell's shape, and protecting against mechanical stress.

The cell membrane is a semi-permeable boundary present in all living cells, but it is flexible and does not provide significant rigidity.

The vacuole stores water and helps maintain turgor pressure, but it relies on the cell wall to prevent the cell from bursting.

The nucleus is an internal organelle that acts as the control center containing the cell's genetic material.

Step 4: Final Answer:

The cell wall is the structure that provides rigidity and protection.

 Quick Tip

Unlike animal cells, plant cells have a rigid Cell Wall made of cellulose which prevents them from bursting in hypotonic solutions.

5. What is the chemical formula for common table salt?

- (A) KCl
- (B) NaCl
- (C) CaCl_2
- (D) Na_2SO_4

Correct Answer: (B) NaCl

Solution:

Step 1: Understanding the Concept:

Common table salt is an ionic compound formed by the chemical bonding of specific metal and non-metal elements.

Step 2: Key Formula or Approach:

The approach is to recall the standard chemical nomenclature and formula for the dietary salt consumed by humans.

Step 3: Detailed Explanation:

Table salt is chemically known as Sodium chloride.

It is composed of sodium cations (Na^+) and chloride anions (Cl^-) bonded together in a 1:1 molar ratio by strong ionic bonds.

Therefore, its correct chemical formula is NaCl.

Looking at the other options, KCl stands for Potassium chloride.

CaCl_2 stands for Calcium chloride.

Na_2SO_4 stands for Sodium sulfate.

Step 4: Final Answer:

The chemical formula for common table salt is NaCl.

 Quick Tip

Table salt (NaCl) is often formed by the strong neutralization reaction between Sodium hydroxide (NaOH) and Hydrochloric acid (HCl).

6. Which law of motion states that for every action, there is an equal and opposite reaction?

- (A) Newton's First Law
- (B) Newton's Second Law
- (C) Newton's Third Law

(D) Law of Gravitation

Correct Answer: (C) Newton's Third Law

Solution:

Step 1: Understanding the Concept:

Sir Isaac Newton formulated three fundamental laws of classical mechanics that describe the relationship between the motion of an object and the forces acting on it.

Step 2: Key Formula or Approach:

The approach is to match the given statement to the corresponding definitions of Newton's laws of motion.

Mathematically, this law is expressed as $\vec{F}_{AB} = -\vec{F}_{BA}$.

Step 3: Detailed Explanation:

Newton's First Law is the law of inertia, stating that an object will remain at rest or in uniform motion unless acted upon by a net external force.

Newton's Second Law defines the quantitative relationship between force, mass, and acceleration, expressed as $F = ma$.

Newton's Third Law explicitly states that when two bodies interact, they apply forces to one another that are equal in magnitude and opposite in direction.

This principle is commonly phrased as "for every action, there is an equal and opposite reaction".

The Law of Gravitation describes the attractive force between two masses, not action-reaction pairs in contact.

Step 4: Final Answer:

The correct law is Newton's Third Law.

 Quick Tip

Action and reaction forces always act on two different bodies, which is why they do not cancel each other out to produce zero net force.

7. Which part of the human brain is responsible for maintaining balance and posture?

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

Correct Answer: (B) Cerebellum

Solution:

Step 1: Understanding the Concept:

The human brain is divided into several specialized anatomical regions, each governing specific physiological and cognitive functions.

Step 2: Key Formula or Approach:

The approach is to map the given regions of the human brain to their primary physiological functions, specifically identifying motor control and equilibrium.

Step 3: Detailed Explanation:

The cerebellum is located at the lower back of the brain, just above the brainstem.

It plays a crucial role in motor control, coordinating voluntary movements, and is primarily responsible for maintaining balance, posture, and equilibrium.

The cerebrum handles higher-level functions such as conscious thought, memory, and sensory processing.

The medulla oblongata is part of the brainstem and controls involuntary autonomic functions like breathing, heart rate, and blood pressure.

The hypothalamus regulates body temperature, hunger, thirst, and links the nervous system to the endocrine system.

Step 4: Final Answer:

The cerebellum is the part of the brain responsible for maintaining balance and posture.

💡 Quick Tip

Think of the word "Cere**bellum**" as balancing a **bell** to easily remember its role in maintaining balance and posture.

8. What process do plants use to convert light energy into chemical energy?

- (A) Respiration
- (B) Transpiration
- (C) Photosynthesis
- (D) Fermentation

Correct Answer: (C) Photosynthesis

Solution:

Step 1: Understanding the Concept:

Autotrophic organisms, such as green plants, need to synthesize their own organic food using

energy acquired from their external environment.

Step 2: Key Formula or Approach:

The approach is to analyze the metabolic pathways in plants and identify the one responsible for capturing sunlight to form glucose.

The overall reaction is $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{light energy} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$.

Step 3: Detailed Explanation:

Photosynthesis is the fundamental biological process by which green plants, algae, and some bacteria convert light energy into chemical energy.

During this process, carbon dioxide and water are transformed into glucose and oxygen in the presence of sunlight and the green pigment chlorophyll.

Respiration is the cellular process of breaking down food molecules to release energy for cellular work, which is the opposite of synthesizing food.

Transpiration is the process of water vapor loss from plant leaves through the stomata.

Fermentation is an anaerobic metabolic pathway used to break down glucose without the presence of oxygen.

Step 4: Final Answer:

Plants use the process of photosynthesis to convert light energy into chemical energy.

💡 Quick Tip

Photosynthesis primarily occurs in the chloroplasts of plant cells, specifically within the mesophyll tissue layer of the leaves.

9. In a chemical reaction, what is the name of the substance that speeds up the reaction without being consumed?

- (A) Reactant
- (B) Product
- (C) Catalyst
- (D) Solvent

Correct Answer: (C) Catalyst

Solution:

Step 1: Understanding the Concept:

Chemical kinetics focuses on the rates of chemical reactions and the various substances or conditions that can alter those rates.

Step 2: Key Formula or Approach:

The approach is to identify the term used in chemistry for an agent that lowers the activation

energy of a reaction while remaining chemically unchanged at the end.

Step 3: Detailed Explanation:

A catalyst is a chemical substance that increases the rate of a chemical reaction by providing an alternative reaction pathway with a lower activation energy barrier.

Crucially, a catalyst participates in the reaction but is not permanently chemically changed or consumed, meaning it can be recovered intact once the reaction concludes.

Reactants are the initial starting materials that undergo a chemical change during the reaction.

Products are the new substances formed as a direct result of the chemical reaction.

A solvent is a medium, usually a liquid, in which solutes are dissolved to form a homogeneous solution.

Step 4: Final Answer:

The correct term for this substance is a Catalyst.

💡 Quick Tip

Biological catalysts are called enzymes.

They are vital protein molecules that speed up complex metabolic reactions in living organisms.

10. Which planet in our solar system is known as the "Red Planet"?

- (A) Venus
- (B) Mars
- (C) Jupiter
- (D) Saturn

Correct Answer: (B) Mars

Solution:

Step 1: Understanding the Concept:

The planets in our solar system have distinct physical characteristics, atmospheric compositions, and common nicknames based on their appearance.

Step 2: Key Formula or Approach:

The approach is to recall the visual characteristics of the planets as seen from Earth or space, specifically identifying the one with a reddish hue.

Step 3: Detailed Explanation:

Mars is the fourth planet from the Sun and is easily recognizable by its distinct reddish appearance in the night sky.

This characteristic red color is due to the widespread presence of iron(III) oxide dust, commonly known as rust, covering its surface.

Venus is the second planet from the Sun and appears remarkably bright and yellowish-white due to its highly reflective, thick atmosphere.

Jupiter is the largest gas giant, known for its Great Red Spot, but the planet itself is generally banded in brown, yellow, and white.

Saturn is the sixth planet, famous primarily for its prominent and complex ring system, appearing pale yellow.

Step 4: Final Answer:

Mars is famously known as the "Red Planet".

 Quick Tip

Mars is home to Olympus Mons, the largest known volcano in the solar system, and possesses two small moons named Phobos and Deimos.

11. What is the pH value of pure water at room temperature?

- (A) 5
- (B) 7
- (C) 9
- (D) 14

Correct Answer: (B) 7

Solution:

Step 1: Understanding the Concept:

The pH scale is a logarithmic scale used in chemistry to specify the acidity or basicity (alkalinity) of an aqueous solution.

Step 2: Key Formula or Approach:

The approach relies on the autoionization of water, where the concentration of hydrogen ions $[H^+]$ equals the concentration of hydroxide ions $[OH^-]$.

The formula for pH is $pH = -\log_{10}[H^+]$.

Step 3: Detailed Explanation:

The standard pH scale typically ranges from 0 to 14 at room temperature (25°C).

A pH value less than 7 indicates an acidic solution, while a pH value greater than 7 indicates a basic solution.

Pure water undergoes autoionization to produce equal concentrations of hydrogen ions (H^+) and hydroxide ions (OH^-), both being 1.0×10^{-7} M at 25°C.

Using the formula, $pH = -\log_{10}(1.0 \times 10^{-7}) = 7$.

Because these acidic and basic ion concentrations are perfectly balanced, pure water is chemically neutral.

Step 4: Final Answer:

The pH value of pure water at room temperature is exactly 7.

 Quick Tip

Remember that the pH scale is logarithmic.
This means that each whole number drop on the scale represents a tenfold increase in hydrogen ion concentration (acidity).

12. Which blood cells are responsible for carrying oxygen throughout the body?

- (A) White blood cells
- (B) Platelets
- (C) Red blood cells
- (D) Plasma cells

Correct Answer: (C) Red blood cells

Solution:

Step 1: Understanding the Concept:

Human blood is a specialized bodily fluid composed of liquid plasma and several distinct cellular elements, each with highly specialized physiological roles.

Step 2: Key Formula or Approach:

The approach is to identify the specific cellular component in the cardiovascular system that contains hemoglobin and functions in gas transport.

Step 3: Detailed Explanation:

Red blood cells, also known scientifically as erythrocytes, are specifically adapted to transport oxygen from the lungs to the body's tissues.

They contain a high concentration of hemoglobin, an iron-rich metalloprotein that reversibly binds to oxygen molecules.

Their unique biconcave disc shape lacks a nucleus in mammals, which maximizes the available surface area for efficient gas exchange.

White blood cells, or leukocytes, are a critical part of the immune system and help defend the body against infectious diseases.

Platelets, or thrombocytes, are essential for blood coagulation and clotting to prevent excessive bleeding.

Plasma cells are a specific type of white blood cell derived from B cells that secrete large vol-

umes of antibodies.

Step 4: Final Answer:

Red blood cells are the specific cells responsible for carrying oxygen throughout the body.

💡 Quick Tip

The average lifespan of a typical human red blood cell is about 120 days before it is removed from circulation by the spleen and liver.

13. What type of lens is used to correct myopia (nearsightedness)?

- (A) Convex lens
- (B) Concave lens
- (C) Cylindrical lens
- (D) Bifocal lens

Correct Answer: (B) Concave lens

Solution:

Step 1: Understanding the Concept:

Myopia, commonly known as nearsightedness, is a common refractive error of the eye where distant objects appear blurry because light focuses improperly.

Step 2: Key Formula or Approach:

The approach involves understanding the optics of myopia, where parallel light rays converge in front of the retina, and determining which lens type diverges light to push the focal point back.

Step 3: Detailed Explanation:

Individuals with myopia typically have an elongated eyeball or an overly curved cornea.

Because of this anatomical structure, the refractive power of the eye is too strong, causing parallel light rays to focus in front of the retina.

To correct this vision defect, incoming light rays must be diverged (spread out) slightly before they enter the eye.

A concave lens is a diverging lens, making it the correct optical tool to push the focal point further back onto the retina.

A convex lens is a converging lens and is used to correct hypermetropia (farsightedness), where light focuses behind the retina.

A cylindrical lens is used specifically to correct astigmatism by providing different focal lengths in different meridians.

A bifocal lens contains two distinct optical powers and is often used to correct presbyopia in

older adults.

Step 4: Final Answer:

A concave lens is used to correctly compensate for myopia.

💡 Quick Tip

To remember lens corrections, use the association: Myopia (Nearsightedness) uses a Cave (Concave) to push light further.

Hyperopia uses a Convex lens.

14. Which element has the highest thermal conductivity of all metals?

- (A) Copper
- (B) Aluminum
- (C) Silver
- (D) Gold

Correct Answer: (C) Silver

Solution:

Step 1: Understanding the Concept:

Thermal conductivity is an intrinsic physical property of a material that measures its ability to conduct and transfer heat energy.

Step 2: Key Formula or Approach:

The approach requires comparing the standardized physical properties of highly conductive metals, specifically their thermal conductivity values measured in $\text{W}/(\text{m} \cdot \text{K})$.

Step 3: Detailed Explanation:

In metals, thermal conductivity strongly correlates with electrical conductivity due to the presence of highly mobile, free delocalized electrons.

Among all naturally occurring pure metals, silver possesses both the highest thermal conductivity and the highest electrical conductivity.

The unique and tightly packed crystalline structure of silver, along with its single valence electron, allows for extremely efficient transfer of kinetic energy.

Copper also has exceptionally high conductivity and is used more widely due to its lower cost, but it still ranks slightly below silver.

Gold is highly conductive and famously resists corrosion, but its thermal conductivity is lower than both silver and copper.

Aluminum is a good, lightweight conductor but ranks significantly lower than the noble and transition metals mentioned above.

Step 4: Final Answer:

Silver is the element that holds the record for the highest thermal conductivity.

💡 Quick Tip

The order of highest electrical and thermal conductivity among common pure metals is: Silver > Copper > Gold > Aluminum.

15. What is the process of a solid turning directly into a gas called?

- (A) Condensation
- (B) Sublimation
- (C) Evaporation
- (D) Deposition

Correct Answer: (B) Sublimation

Solution:

Step 1: Understanding the Concept:

Phase transitions describe the physical transformation of matter from one state (solid, liquid, or gas) to another in response to changing temperature or pressure.

Step 2: Key Formula or Approach:

The approach requires identifying the specific thermodynamic term assigned to the endothermic phase change from a solid directly to a gaseous state.

Step 3: Detailed Explanation:

Sublimation is the specific phase transition in which a substance moves directly from the solid phase to the gas phase.

Crucially, this occurs without the substance ever passing through the intermediate liquid phase. A classic real-world example is dry ice (solid carbon dioxide), which turns directly into cold carbon dioxide gas when exposed to room temperature and pressure.

Condensation is the transition from a gaseous state back into a liquid state.

Evaporation is a type of vaporization that occurs on the surface of a liquid as it transitions into the gas phase.

Deposition is the direct reverse of sublimation, where a gas transforms directly into a solid without becoming a liquid first, such as frost formation.

Step 4: Final Answer:

The process of a solid turning directly into a gas is called sublimation.

 Quick Tip

Common chemical substances that undergo sublimation at standard atmospheric pressures include solid carbon dioxide (dry ice), solid iodine, and naphthalene (used in mothballs).
