GUJCET-BE 2026 Biology Question Paper (Memory-Based Questions) with Solutions Pdf

Time Allowed :1 Hours	**Maximum Marks :**40	**Total Questions :**40

General Instructions

Read the following instructions very carefully and strictly follow them:

- The Biology test consists of 40 questions. Each question carries 1 mark. For each correct response, the candidate will get 1 mark. For each incorrect response, $\frac{1}{4}$ mark will be deducted. The maximum marks are 40.
- This Test is of 1 hour duration.
- Use Black Ball Point Pen only for writing particulars on OMR Answer Sheet and marking answers by darkening the circle **"•"**.
- Rough work is to be done on the space provided for this purpose in the Test Booklet only.
- On completion of the test, the candidate must handover the Answer Sheet to the Invigilator in the Room / Hall. The candidates are allowed to take away this Test Booklet with them.
- The Set No. for this Booklet is **07**. Make sure that the Set No. printed on the Answer Sheet is the same as that on this Booklet. In case of discrepancy, the candidate should immediately report the matter to the Invigilator for replacement of both the Test Booklet and the Answer Sheet.
- The candidate should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet.
- Do not write your Seat No. anywhere else, except in the specified space in the Test Booklet / Answer Sheet.
- Use of White fluid for correction is not permissible on the Answer Sheet.
- Each candidate must show on demand his/her Admission Card to the Invigilator.
- No candidate, without special permission of the Superintendent or Invigilator, should leave his/her seat.
- Use of Simple (Manual) Calculator is permissible.

Biology

1. Which part of the human brain controls voluntary actions?

(a) Medulla
(b) Cerebellum
(c) Cerebrum
(d) Hypothalamus

Correct Answer: (c) Cerebrum

Solution:
Step 1: Understanding the Concept:
The human brain is divided into the forebrain, midbrain, and hindbrain. Different regions manage distinct functions ranging from basic survival to complex thought.

Step 2: Detailed Explanation:
The **Cerebrum** is the largest part of the brain and is responsible for high-level functions, including voluntary actions (like walking or talking), memory, and decision-making. The cerebellum coordinates balance, while the medulla controls involuntary actions like heartbeat.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

Remember: **Cerebrum** = "Smart" (Thinking/Voluntary). **Cerebellum** = "Balance" (Coordination). **Medulla** = "Life" (Involuntary breathing/heart).

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2. The functional unit of kidney is:

(a) Neuron
(b) Nephron
(c) Alveoli
(d) Glomerulus

Correct Answer: (b) Nephron

Solution:
Step 1: Understanding the Concept:
The kidney filters waste from the blood. This filtration happens across millions of tiny microscopic structures that perform the actual work of excretion.

Step 2: Detailed Explanation:
The **Nephron** is the structural and functional unit of the kidney. Each kidney contains about one million nephrons which filter blood, reabsorb useful substances, and form urine. (A neuron is for the nervous system; alveoli are for the lungs).

Step 3: Final Answer:
The correct option is (b).

Quick Tip

Don't confuse **Nephron** (Kidney/Excretion) with **Neuron** (Brain/Nervous System). They sound similar but belong to completely different systems!

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3. Hemoglobin is responsible for:

(a) Digestion
(b) Oxygen transport
(c) Immunity
(d) Hormone secretion

Correct Answer: (b) Oxygen transport

Solution:
Step 1: Understanding the Concept:
Blood consists of plasma and blood cells. Red Blood Cells (RBCs) contain a specific iron-rich protein that has a high affinity for gases.

Step 2: Detailed Explanation:
Hemoglobin binds with oxygen in the lungs to form oxyhemoglobin. It then travels through the bloodstream to deliver this oxygen to all the tissues and cells of the body for cellular respiration.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

Iron is the central component of hemoglobin. This is why people with iron deficiency often feel tired—their blood can't carry enough oxygen!

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4. Insulin hormone is secreted by:

(a) Liver
(b) Pancreas
(c) Kidney
(d) Thyroid

Correct Answer: (b) Pancreas

Solution:
Step 1: Understanding the Concept:

Hormones are chemical messengers secreted by endocrine glands. Insulin is critical for regulating the amount of glucose (sugar) in the blood.

Step 2: Detailed Explanation:
The **Pancreas** has specialized cells called the Islets of Langerhans. The Beta cells within these islets secrete **Insulin**, which helps cells absorb glucose from the blood, thereby lowering blood sugar levels.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

The Pancreas is a "dual gland" (Heterocrine). It produces digestive enzymes (Exocrine) and hormones like Insulin (Endocrine).

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5. Photosynthesis occurs in:

(a) Mitochondria
(b) Ribosome
(c) Chloroplast
(d) Nucleus

Correct Answer: (c) Chloroplast

Solution:
Step 1: Understanding the Concept:
Photosynthesis is the process by which green plants make their own food using sunlight. This requires specific organelles containing light-absorbing pigments.

Step 2: Detailed Explanation:
Chloroplasts are organelles found in plant cells that contain the green pigment chlorophyll. Chlorophyll traps solar energy to convert water and carbon dioxide into glucose and oxygen.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

Think of the cell like a house: The **Nucleus** is the office (Control), **Mitochondria** is the power plant (Energy), and **Chloroplast** is the kitchen (Food).

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6. Opening and closing of stomata is regulated by:

(a) Guard cells
(b) Epidermal cells
(c) Xylem
(d) Phloem

Correct Answer: (a) Guard cells

Solution:
Step 1: Understanding the Concept:
Stomata are tiny pores located on the surface of leaves that allow for gas exchange and transpiration. Their opening and closing must be tightly controlled to prevent excessive water loss.

Step 2: Detailed Explanation:
Each stoma is flanked by two kidney-shaped (in dicots) or dumb-bell shaped (in monocots) **Guard cells**. When water flows into these cells, they swell and become turgid, causing the pore to open. When they lose water, they become flaccid and the pore closes.

Step 3: Final Answer:
The correct option is (a).

Quick Tip

Think of guard cells like a pair of balloons. When you "fill" them with water, they curve outward and create a gap (the stoma) in the middle.

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7. The main product of photosynthesis is:

(a) Protein
(b) Glucose
(c) Lipid
(d) Oxygen

Correct Answer: (b) Glucose

Solution:
Step 1: Understanding the Concept:
Photosynthesis is an anabolic process where light energy is converted into chemical energy stored in organic compounds.

Step 2: Detailed Explanation:
The chemical equation for photosynthesis is:

$$6CO_2 + 12H_2O \xrightarrow{\text{Sunlight/Chlorophyll}} C_6H_{12}O_6 + 6H_2O + 6O_2$$

Here, $C_6H_{12}O_6$ is **Glucose**, which is the primary food/product. Oxygen is released as a byproduct.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

While glucose is the "Main Product," plants often store this energy as **Starch** for later use.

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8. Mendel is known as the father of:

(a) Evolution
(b) Genetics
(c) Ecology
(d) Taxonomy

Correct Answer: (b) Genetics

Solution:
Step 1: Understanding the Concept:
Gregor Johann Mendel conducted groundbreaking experiments in the mid-19th century that laid the foundation for our understanding of how traits are passed from parents to offspring.

Step 2: Detailed Explanation:
Mendel worked with pea plants (*Pisum sativum*) and formulated the Laws of Inheritance (Law of Segregation and Law of Independent Assortment). For this reason, he is universally recognized as the Father of **Genetics**.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

Mnemonic for "Fathers": **M**endel = **G**enetics (MG), **D**arwin = **E**volution (DE), **L**innaeus = **T**axonomy (LT).

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9. DNA stands for:

(a) Deoxyribonucleic Acid
(b) Dinucleic Acid
(c) Deoxyribose Acid
(d) Double Nucleic Acid

Correct Answer: (a) Deoxyribonucleic Acid

Solution:
Step 1: Understanding the Concept:
DNA is the hereditary material in humans and almost all other organisms. It is a polymer made of repeating units called nucleotides.

Step 2: Detailed Explanation:
The name comes from the type of sugar molecule it contains (**Deoxyribose**) and its location and chemical nature (**Nucleic Acid**). It carries the genetic instructions used in the development and functioning of all known living organisms.

Step 3: Final Answer:
The correct option is (a).

Quick Tip

DNA is like the "Blueprints" of a building; it contains all the instructions needed to build and operate a human being.

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10. The basic unit of heredity is:

(a) Cell
(b) Chromosome
(c) Gene
(d) Tissue

Correct Answer: (c) Gene

Solution:
Step 1: Understanding the Concept:
Genetic information is organized into a hierarchy of structures within the nucleus of a cell.

Step 2: Detailed Explanation:
A **Gene** is a specific segment of DNA that codes for a particular protein or trait. While chromosomes are large structures that carry many genes, the individual "unit" of inheritance that determines a specific characteristic is the gene.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

Hierarchy: **Gene** (a single instruction) $\rightarrow$ **DNA** (the manual) $\rightarrow$ **Chromosome** (the shelf of manuals) $\rightarrow$ **Nucleus** (the library).

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11. Fertilization in humans occurs in:

(a) Ovary
(b) Uterus
(c) Fallopian tube
(d) Cervix

Correct Answer: (c) Fallopian tube

Solution:
Step 1: Understanding the Concept:
Fertilization is the fusion of a male gamete (sperm) with a female gamete (ovum) to form a zygote. This process takes place within the female reproductive tract.

Step 2: Detailed Explanation:
After ovulation, the egg is released from the ovary and moves into the **Fallopian tube** (also known as the oviduct). If sperm are present, fertilization usually occurs in the ampulla region of this tube. The resulting zygote then travels to the uterus for implantation.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

The **Ovary** produces the egg, the **Fallopian tube** is where the egg meets the sperm, and the **Uterus** is where the baby grows.

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12. Pollination is:

(a) Fusion of gametes
(b) Transfer of pollen from anther to stigma
(c) Seed formation
(d) Fruit formation

Correct Answer: (b) Transfer of pollen from anther to stigma

Solution:
Step 1: Understanding the Concept:
Pollination is a physical process in flowering plants that must occur before the biological process of fertilization can take place.

Step 2: Detailed Explanation:
Pollination involves the movement of pollen grains (containing male gametes) from the **anther** (male part) of a flower to the **stigma** (female part) of the same or another flower. It can be carried out by wind, water, or animals like bees.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

Don't confuse **Pollination** with **Fertilization**. Pollination is the "delivery" of pollen; Fertilization is the "union" of the male and female cells.

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13. The functional unit of ecosystem is:

(a) Population
(b) Community
(c) Ecosystem
(d) Organism

Correct Answer: (c) Ecosystem

Solution:
Step 1: Understanding the Concept:
Ecology studies the relationship between living organisms and their environment. The level at which these interactions become a self-sustaining system is considered the functional unit.

Step 2: Detailed Explanation:
An **Ecosystem** includes all the biotic (living) and abiotic (non-living) components in a particular area interacting as a system. It is considered the basic functional unit because it is the smallest level where energy flow and nutrient cycling are complete.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

Think of an **Organism** as a player, a **Population** as a team, and the **Ecosystem** as the entire stadium including the weather and the grass!

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14. Ozone layer protects us from:

(a) Infrared rays
(b) Visible light
(c) Ultraviolet rays
(d) X-rays

Correct Answer: (c) Ultraviolet rays

Solution:
Step 1: Understanding the Concept:
The ozone layer is a region of high ozone (O_3) concentration in the Earth's stratosphere. It acts as a shield for the planet.

Step 2: Detailed Explanation:
The ozone layer absorbs the majority (about 97-99%) of the Sun's medium-frequency **Ultraviolet (UV)** radiation. Without this protection, high levels of UV rays would cause skin cancer, cataracts, and damage to crops and marine life.

Step 3: Final Answer:
The correct option is (c).

Quick Tip

Ozone (O_3) is "good" up high in the stratosphere (protection) but "bad" down low in the troposphere (it acts as a pollutant and smog).

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15. Which organism is commonly used in genetic engineering?

(a) Virus
(b) Bacteria
(c) Algae
(d) Fungi

Correct Answer: (b) Bacteria

Solution:
Step 1: Understanding the Concept:
Genetic engineering involves manipulating the DNA of an organism to introduce new traits. Scientists prefer organisms that reproduce quickly and have simple genetic structures.

Step 2: Detailed Explanation:
Bacteria (especially *E. coli*) are widely used because they grow rapidly, their genome is well-understood, and they contain **plasmids** (circular DNA) that can be easily manipulated to carry foreign genes, such as the gene for human insulin.

Step 3: Final Answer:
The correct option is (b).

Quick Tip

Bacteria are like biological "factories." Once you give them the DNA instructions, they can produce massive amounts of medicine or protein in a very short time.