Bio assignment question(midterm)

Group 1

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Question 1. (1+2+2)

A. What are living things made of according to chemistry ?

Ans: They are made of chemical compounds.

B. How much fat do we need per day to stay fit? And do you think Americans stick to that amount?

Ans: We need about a tablespoon of fat per day to stay fit. However, Americans don't follow this guideline, as they consume around 100 lbs of fat per year, which equals approximately 8 tablespoons per day. This is a major factor contributing to obesity.

C. Why does the quality of fat matter more than the quantity?

Ans: **The quality of fat affects overall health, which is why it is more important than the quantity. Trans fats can increase the risk of atherosclerosis, heart disease, and other health issues, whereas healthy fats typically do not. Consuming a moderate amount of unsaturated fat is beneficial for overall well-being.**

Question 2.[1+1+2+1]

A.What is Diffusion?

Ans: The process by which molecules spread from areas of high concentration, to areas of low concentration.

B.What Is Osmosis?

Ans: The diffusion of water (across a membrane). Water will move in the direction where there is a high concentration of solute (and hence a lower concentration of water)

C.Define the Polar and Non polar covalent bond.

Ans:

•Polar Covalent Bond: Atoms participating in the bonds do not share electrons equally.

•Non Polar Covalent Bond: The atoms participating in the bond are sharing electrons equally. There is no difference in charge between the two ends of such bonds.

D.What is Isotopes?

Ans: Forms of an element that differ in the number of neutrons their atoms carry.

Question 3 (1.5+2+1.5)

A. What is a chemical bond ? Name the 3 most common and significant bonds.

Ans:

- The force that holds the atom together in a molecule is called a chemical bond.
- The 3 most common and significant bonds are-
  i) Ionic bonds
  ii) Covalent bonds
  iii) Hydrogen bonds

B. What is an Ionic bond? Where does an Ionic bond occur ?Give 3 examples of Ionic bond.

Ans:

- An ionic bond is an electrostatic attraction between two atoms where one atom transfers an electron to the other atom.
- Ionic bond occur between a metal and a non metal .
- 3 examples of Ionic bond are:

i)NaCl

ii)NaBr
iii)NaF

C . What is the definition of Electronegativity ? Write 1 factor that affect the electronegativity in atoms.
Ans:

- Electronegativity is the tendency of an atom in a molecule to attract the shared pair of electrons towards itself .
- Writing 1 factor that affect electronegativity in atoms -
  - Electronegativity tends to increase across a period from left to right.

Question 4 (1+2+2)

A.water is cohesive or adhesive?
Ans:water is cohesive cause water molecules resist separating from each other.

B.why water molecules form polar covalent bond??
Ans:The Oxygen pulls the shared elections a bit more than the hydrogen atoms do.Thus,each of the atoms in a water molecule carries a slight charge.The Oxygen atom is slightly negative and the hydrogen atoms are slightly positive. The separation of charge in a water molecule forms polar bond.

C.why ice floats on water??
Ans: Below 0°C (32°F),water molecules do not jiggle enough to break hydrogen bonds,they become locked in the rigid,lattice like bonding pattern of ice.Individual water molecules pack less densely in ice than they do in water,so ice floats on water.

Question 5 (2+2+1)

A. How does the central dogma of molecular biology explain the flow of genetic information from DNA to proteins, and why is reverse transcription an exception to this process?

Ans: The central dogma of molecular biology describes the flow of genetic information as DNA → RNA → Protein through transcription and translation. However, reverse transcription (in retroviruses) is an exception where RNA is converted back into DNA.

B. What role does the nuclear envelope play in regulating the exchange of molecules between the nucleus and cytoplasm?

Ans:
The nuclear envelope controls the movement of molecules between the nucleus and cytoplasm through nuclear pores. Small molecules pass freely, while larger ones, like RNA and proteins, need special transport proteins to move in or out.

C.What transports nutrients to the cell?
Ans: The blood transports nutrients to the cell

Question 6 [2+2+1]

a.what role do hydrogen bonds play in the structure of DNA?
Answer:Hydrogen bonds stabilize DNA's double helix by pairing complementary bases (A-T with 2 bonds, G-C with 3 bonds), ensuring proper replication, transcription, and structural integrity.

b.How does diffusion contribute to the process of gas exchange in the lungs?
Answer:Diffusion enables gas exchange in the lungs by allowing oxygen (O_2) to move from the alveoli (high concentration) into the blood and carbon dioxide (CO_2) to move from the blood (high concentration) into the alveoli, driven by concentration gradients. This ensures oxygen enters the bloodstream and CO_2 is exhaled.

c.what is the definition of tonicity? Answer:Tonicity is the measure of a solution's ability to cause a cell to gain or lose water through osmosis, depending on the relative solute concentration inside and outside the cell.

Group 2

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1.(2+2+1)
a) What is adaptation?

Answer: a) Adaptation is when an organism changes to survive better in its environment.

b) Give an example of an animal that uses camouflage to survive.

Answer:b) The chameleon can change its skin color to blend into its surroundings

c) What is hibernation? Name an animal that hibernates?

Answer: c) Hibernation is when an animal sleeps for a long time in winter to save energy.
Example: Bear.

2.(1+2+2)
a)What is cytology?

Answer:a)cytology is the study of cells.

b)What is the origin of earth?

Answer: b)The origin of earth is Big Bang Theory. The huge explosion from a pin size sized to a huge universe is the Big Bang theory.

c)What is the heredity?

Answer:c) Heredity is biological information which is inherited from parents in one generation by the offspring to the next.

3.(2+1+2)
a) Define the term “biological hierarchy.”
Answer : a) Biological hierarchy refers to the organization of living things into different levels, from the smallest unit or cells to the most complex systems . This hierarchy helps in understanding how life is structured and functions at different scales.

b) Arrange the following levels of biological organization from simplest to most complex: Organ, Organism, Cell, Tissue, Population, Ecosystem.

Answer: b) Arranging the levels of biological organization from simplest to most complex:
Cell → Tissue → Organ → Organism → Population → Ecosystem .

c) Explain the relationship between cells, tissues, and organs. answer this one.

Answer: c) Cells are the basic units of life. When similar cells work together, they form a tissue . Different tissues combine to create an organ , which performs a specific function in an organism. Thus, cells form tissues, tissues build organs, and organs contribute to the survival and function of an organism.

4.(2+1+2)
a) What is meant by “energy flow” in an ecosystem?

Answer: Energy flow in an ecosystem refers to the transfer of energy from one organism to another through food chains and food webs, starting from producers to consumers and decomposers.

b) Classify the following organisms as primary producers, primary consumers, or secondary consumers: Grass, Lion, Deer.

Answer: Grass – Primary producer, Deer – Primary consumer, Lion – Secondary consumer.

c) How does energy transfer in a food chain?

Answer: Energy moves in a one-way direction: primary producers (plants) capture energy from the sun, primary consumers (herbivores) eat plants, secondary consumers (carnivores) eat herbivores, and decomposers break down dead matter, recycling nutrients back into the ecosystem.

5.(2+2+1)
a) What were the conditions of early Earth before life began?

Answer: Early Earth had extremely high temperatures, poisonous gases, and lacked free oxygen

and water. Life eventually evolved from chemical reactions and gradual changes in these harsh conditions.

b)How did life transition from simple to complex organisms?

Answer: Life began when the first cells formed, initially as single-celled organisms. Over time, through evolution and natural selection, these simple organisms developed into more complex multicellular forms, leading to the diversity of life we see today.

c)What is the theory that explains how species survive over time?

Answer: The theory of “Survival of the Fittest” explains that only the organisms best adapted to their environment survive and pass their traits to future generations.

Group 3

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Question – 01: 1 + 3 + 1 = 5
a. Define ER (Endoplasmic Reticulum).
Ans.: The endoplasmic reticulum (ER) is a network of membranes involved in the synthesis, folding, modification, and transport of proteins and lipids.
b. How many kinds of ER are present in a cell? What are the differences between these ERs?
Ans.: The endoplasmic reticulum (ER) is divided into two types: smooth ER and rough ER. Rough ER is studded with ribosomes on its cytoplasmic surface, making it the protein synthesis and processing site. In contrast, smooth ER lacks ribosomes and is involved in lipid synthesis, detoxification, and calcium ion storage, playing a crucial role in metabolic processes.
c. Which component of the Cytomembrane System modifies the products of ER?
Ans.: Golgi Bodies modify the products of ER, such as Proteins.

Question – 02: 2.5 + 1 + 1.5 = 5

a. What are the functions of Golgi Bodies?

Ans.: The Golgi apparatus is responsible for modifying, sorting, and packaging proteins and lipids for secretion or use within the cell. It receives these molecules from the endoplasmic reticulum, processes them (e.g., by adding carbohydrate groups), and then directs them to their final destinations, either inside or outside the cell.

b. Mention two main types of Vesicles.

Ans.: There are many types of vesicles, the main two of which are lysosomes and peroxisomes.

c. Briefly explain the membrane system of Mitochondria.

Ans.: Mitochondria is a double membrane system. One is a smooth outer membrane facing the cytoplasm, and the other is an inner membrane known as cristae, where chemical reactions to make ATP take place.

Question – 03: 1 + 1 + 1 + 2 = 5

a. What are lysosomes?

Ans.: Lysosomes are membrane-bound organelles that contain digestive enzymes.

b. What kind of elements are digested by the enzymes contained in the peroxisomes?

Ans.: Enzymes contained in the peroxisomes digest fatty acids and amino acids.

c. How do the peroxisome enzymes handle the toxic hydrogen peroxide (H2O2)?

Ans.: Peroxisome enzymes convert hydrogen peroxide to water and oxygen or use it in reactions that break down alcohol and other toxins.

d. What is the function of lysosomes?

Ans.: The function of lysosomes is the cell's waste disposal system, breaking down excess or worn-out cell parts and foreign materials like bacteria. Lysosomes are crucial for maintaining cellular health by recycling materials and participating in processes like autophagy.Question – 04: 1.5 + 1.5 + 2 = 5

a. Which molecule is known as the primary energy source of a cell, and which organelle produces it?

Ans.: ATP is known as the primary energy source of a cell, produced by Mitochondria.

b. Define Plastids, and which plastids are specialized for photosynthesis?

Ans.: Plastids are a category of membrane-enclosed organelles that function in photosynthesis or storage in plant and algal cells. Chloroplasts are specialized for photosynthesis.

c. What kind of similarities do mitochondria and chloroplasts have with the bacteria?

Ans.:

2. 1. Double membrane envelope.

Free ribosome and circular DNA.

3. Independent growth and reproduction.

Question – 05: 1.5 + 1 + 2.5 = 5

a. What are the differences between cilia and flagella?

Ans.: Cilia are short hair-like structures found in eukaryotic cells. In contrast, flagella are long hair-like structures found in both prokaryotic and eukaryotic cells.

b. What is enclosed by the two outer membranes of the chloroplast?

Ans.: The two outer membranes enclose a semifluid interior called the stroma, which contains enzymes and the chloroplast's DNA.

c. How is energy from sunlight utilized in the chloroplast, and what is the name of the process?

Ans.: Chlorophyll and other molecules in the thylakoid membrane capture sunlight energy to drive the synthesis of ATP, which is then used inside the stroma to produce carbohydrates from carbon dioxide and water, and the entire process known as photosynthesis.

Group 4

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DORJOY SAHA

Question-1

- **X**: DNA → RNA
- **Y**: RNA → Protein
- **Z**: RNA → DNA

a) How do you define Gene? (1)

Ans: A gene is a fragment of DNA that carries the instructions for a particular trait. It is a specific sequence of DNA.

b) Explain the central dogma of life and outline the basic principles of steps X and Y. (2.5)

Ans :The transmission of genetic information from DNA to protein via RNA is called the central dogma of life.It consists of three main processes.

1) Replication; 2) transcription; 3) translation.

●

Here step **X** indicates Transcription process and step **Y** indicates translation process.

Transcription

Transcription is the process of synthesizing RNA from a DNA template. In the nucleus, a segment of DNA is transcribed into messenger RNA (mRNA). Transcription produces mRNA.

Translation

Translation is the process in which ribosomes synthesize proteins using information in the messenger RNA (mRNA). Ribosomes are the sites of translation.

c) Does step **Z** align with the traditional central dogma? Provide a detailed explanation with relevant examples. (1.5)

Ans: Here step **Z** indicates the reverse transcription and it is not part of the traditional central dogma.

In some cases, like in retroviruses (e.g., HIV), an enzyme called reverse transcriptase allows RNA to be converted back into DNA. This process is called reverse transcription and is an exception to the original central dogma.

MUSHFIQUR RAHMANQuestion-2

A)What are the two main steps of gene expression? (1)

Ans: The two main stages of gene expression are Transcription and Translation..

B).What is the role of RNA in the process of transcription and translation? (1.5)

Ans: In transcription, RNA is made from DNA. This RNA is called **messenger RNA (mRNA)**, which carries genetic information from DNA to the ribosome. **In translation**, mRNA helps make proteins. The ribosome reads the mRNA code, and **transfer RNA (tRNA)** brings the correct amino acids to build the protein.So, RNA acts as a bridge between DNA and proteins, helping in the process of gene expression.

C).Explain the central dogma of life and describe how genetic information flows from DNA to proteins. (2.5)

Ans: The **central dogma of life** explains how genetic information flows within a cell. It has three main steps:

1. 2. 3. **Replication** – DNA makes a copy of itself to pass genetic information to new cells.

Transcription – DNA is used as a template to make **messenger RNA (mRNA)**. This mRNA carries genetic instructions from the nucleus to the ribosome.

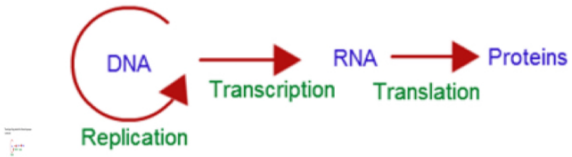
Translation – The ribosome reads the mRNA code and uses **transfer RNA (tRNA)** to bring the correct amino acids. These amino acids link together to form a protein..

NUZHAT ALAM ANJUM

Question-3

A) How does the flow of information happen?

Ans- The flow from gene sequence to protein product happens like-



B) Define Translation. How many steps of translation is there?

Ans- The sequence encoded in the mRNA molecule is decoded and converted to an amino acid sequence in a process called translation.

There are three steps of translation.

C)Why is central dogma important?

Ans-

Why is it important?

The Central Dogma explains how genes (DNA) control the traits and functions of living organisms.

Proteins are essential for almost all cellular processes, such as enzymes, structural components, and signaling molecules.

TANISHA AMREEN

Question-4

a) Write about Aristotle's classification system.(1)

Ans: Aristotle's classification system had 2 major divisions. Plants and animals. Both of them also have 3 sub divisions.

b) Explain the method where the byproduct is mRNA.(2)

Ans: The method is transcription, a process in molecular biology where a segment of DNA is copied into mRNA (messenger RNA). This occurs in the nucleus of eukaryotic cells and the cytoplasm of prokaryotic cells. The enzyme RNA polymerase binds to the DNA at the promoter region and synthesizes a complementary RNA strand. The resulting mRNA carries genetic instructions from DNA to ribosomes for protein synthesis.

c) What is phylogenetic phylogenetic system? (2)

Ans: The phylogenetic classification system categorizes organisms based on their evolutionary history and common ancestors. It uses data from genetics, morphology, and molecular biology to establish relationships among species. This system, developed with the help of cladistics, results in a phylogenetic tree that represents evolutionary connections. It is more accurate than traditional classification methods as it reflects true evolutionary lineage

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1.a) what is a cell? (1 marks)

Ans: A cell is the smallest unit of life.Some cells live and reproduce independently. Others do so as part of a multicelled organism.

b) what is cell theory?How many cells have the biologist categorized and what are they?(2 marks)

Ans:The cell theory is a fundamental concept in biology that states that all living organisms are composed of cells, the cell is the basic unit of life, and all cell.Biologists have categorized cells into two general types:

•Eukaryotic Cells

•Prokaryotic Cells

C)Define the followings(2 marks)

1.prokaryote

Ans:Usually unicellular, No True Nucleus,organelles absent,Smaller ribosomes.

Example:bacteria, Archea.

2.Eukaryote

Ans:Usually multicellular,Membrane bound nucleus,Organelles present,Larger ribosomes

Example: animal, fungi, plant, algea.

2.a)What are Ribosomes? (2)

Ribosomes are non-membranous organelles responsible for the synthesis of proteins from amino acids.

b)What are they made of? (1)

They are composed of RNA and protein.

c)What are they comprised of and name them (2)

Each ribosome is composed of two subunits—a large one and a small one and they are Bound ribosomes and Free ribosomes.3.a) What is the nuclear envelope, and what

is its function? (2 marks)
Answer:The nuclear envelope is a double membrane (two phospholipid bilayers) that surrounds the nucleus. It controls the passage of molecules between the nucleus and cytoplasm through nuclear pores
b) What is stored in the nucleus, and how is it organized?(2 marks)
Answer:The nucleus stores the cell's genetic material (DNA), which contains instructions for cellular functions. DNA is organized into discrete units called chromosomes associated with proteins.
c)What are two important processes that occur in the nucleus?(1marks)
Answer:Two key processes in the nucleus are DNA replication (copying DNA before cell division) and transcription.
4.a)Who proposed the name cell and when did he do it? (1)
And: Robert Hooke proposed the name cell in the middle of the 17th century.
b)What is Plasma Membrane? (2)
Ans: The plasma membrane is the boundary between the cell and its environment. It isolates the cell, regulates what enters and leaves the cell and allows interaction with other cells. It comprises lipids and proteins.
c)What are the functions of plasma membranes? (2)
Ans: •A cell must exchange materials with its surroundings, a process controlled by the plasma membrane

•Plasma membranes are selectively permeable, regulating the cell's molecular traffic.
5.a) What does the cytoskeleton do in eukaryotic cells? (1marks)
A: It helps organize the cell, keeps its shape, and holds organelles in place.
b) How is the cytoplasm different in prokaryotic and eukaryotic cells?(2marks)
A: In prokaryotes, the cytoplasm is a simple, jelly-like mix of water, proteins, and genetic material. In eukaryotes, it has a cytoskeleton, which is a network of fibers that helps organize the cell.
c) Why is the cytoskeleton important for cells?
(2 marks)
A: It gives the cell structure, helps it keep its shape, and allows organelles to move around. It also helps during cell division

Group 6

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Question 1:
a) Define the following: (2)
I) Monomer
II) Polymer
b) What is polymerization? (1)
c) How does hydrolysis release energy that was stored during polymerization? (2)
Answer:
a)
b) c) I) A monomer is a small molecular unit that can join with other similar units to form a polymer through chemical bonding.
II) A polymer is a large molecule made up of repeating smaller units called monomers, which are chemically bonded together.
Polymerization is the linking together of monomers to form polymers.
By breaking the bonds between monomers, Hydrolysis liberates the energy that polymers contained during condensation; thus, some of the energy required to polymerize is returned upon hydrolysis.Question 2:
a) b) c) What are the three types of carbohydrates? (1)
Which two monosaccharides make up sucrose and lactose and where they most commonly found? (2)
Give 4 functions of carbohydrates in the body? (2)
Answer:
a) b) c) The three types of carbohydrates are: monosaccharides, oligosaccharides, and polysaccharides.

Sucrose is made up of glucose and fructose and is most commonly found in table sugar and plants like sugarcane and sugar beets. Lactose is made up of glucose and galactose and is most commonly found in milk and dairy products

Four functions of carbohydrates in the body are:

I) Providing energy.

II) Sparing protein (preventing protein breakdown for energy).

III) Supporting digestion (through dietary fiber).

IV) Storing energy (in the form of glycogen).

Question 3:

a) b) c) How are amino-acids classified and how do they form protein? (2)

What are the two common forms found in the secondary structure of proteins? (1)

What are the key differences befween the tertiary and quaternary structure of a proteins in tems of polypeptide chains and complexity? (2)

Answer:

a) b) Amino acids are classified into essential (must be supplied in the diet) and non-essential(not supplied in the diet) categories.

They are bonded together by peptide bonds to form protein.

The two common forms found in the secondary structure of proteins are α-helices (alpha helices) and β-pleated sheets (beta-pleated sheets).

c)

I) Polypeptide chains:

• Tertiary: Single polypeptide chain.• Quaternary: Multiple polypeptide chains.

II) Complexity:

• Tertiary: Shape of a single chain.

• Quaternary: Interaction of multiple chains.

Question 4:

A) B) How are amino acids bonded together to form a protein? (1)

There are how many level of protein structure and what are they? (2)

C) Give four biological function’s of proteins? (2)

Answer:

A) B) Amino acids are bonded together to form a protein through peptide bonds.

There are four levels of protein structure:

I) Primary.

II) Secondary.

III) Tertiary.

IV) Quaternary.

C) Four biological functions of proteins are -

I) They act as antibodies to prevent disease.

II) The milk proteins help the growth of infant mammals.

III) Protein acts as storage material of food and energy.

IV) Many proteins are enzymes that catalyze biochemical reactions.

Question 5:

A) a)How do lipids differ from carbohydrates in terms of composition, solubility,energy storage and what are the main building blocks of lipids? (3.5)

B) Answer these following: (1.5)

I) What makes phospholipids amphiphilic?

II) What is the common symbol used to represent carbo-hydrates?

III) In which cells are fats stored in animals?Answer:

A) B) I) Composition: Lipids are made of carbon, hydrogen, and oxygen, but without a fixed ratio (C:H:O), whereas carbohydrates follow a C:H:O ratio (usually 1:2:1).

II) Solubility: Lipids are insoluble in water (hydrophobic), while carbohydrates are typically soluble in water.

III) Energy storage: Lipids store more energy than carbohydrates, providing twice as much energy per gram.

The Main building blocks of Lipids are fatty acids and glycerol.

I) Phospholipids are amphiphilic because they have a hydrophilic phosphate head and hydrophobic fatty acid tails.

II) The common symbol used to represent carbohydrates is $(CH_2O)n$.

III) Fats are stored in adipose cells (adipocytes) in animals.

Question 6:

A) How many parts are there in a nucleotide and what are they and describe them in short. (3)

B) Give 4 differences between DNA and RNA. (2)

Answer:

A) B) A nucleotide consists of three parts:

I) Phosphate group: Contains phosphorus and oxygen, forming part of the nucleic acid backbone.

II) Pentose sugar: A 5-carbon sugar that is deoxyribose in DNA and ribose in RNA.

III) Nitrogenous base: A nitrogen-containing base, which can be adenine (A), thymine (T), uracil(only in RNA), cytosine (C),and guanine (G).

4 differences between DNA and RNA:

I) Structure: DNA is double-stranded, while RNA is single-stranded.

II) Sugar: DNA contains deoxyribose, while RNA contains ribose.
III) Bases: DNA has thymine (T), while RNA has uracil (U).
IV) Function: DNA stores genetic information, while RNA transfers genetic information and helps in protein synthesis.

Group 7

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Question 1

1. Who is known for contributing to the development of taxonomy? (1)
Ans: Carolus Linnaeus is known for contributing to the development of taxonomy.
2. What is the difference between a genus and a species? Provide an example for each.(2)

Genus	Species
Group of species that are similar	Organisms that are structurally very similar.
Plural is 'genera'.	Plural is also 'species'
Sugar maple: Acer saccharum	Red maple: Acer rubrum

3. What are the seven main classification groups in taxonomy? (2)
Ans: 1. Kingdom
2. Phylum3. Class
4. Order
5. Family
6. Genus
7. Species

Question 2

1. What is classification in biology? (1)
Ans: Classification is organizing living things into groups based on shared characteristics.
2. What are the main classification groups (taxa) in biology, and how do they help? (2)
Ans: The main classification groups are kingdom, phylum, class, order, family, genus, and species. These groups help scientists understand relationships between different organisms.
3. Why do we use scientific names for living things, and how are they given? (2)
Ans: Scientific names are used to avoid confusion. They are based on binomial nomenclature, where each organism is given a two-part name: genus and species. This helps identify organisms clearly and consistently.

Question 3

1. Who developed the modern classification system? (1)
Ans: Carolus Linnaeus developed the classification system of our era.
2. What is binomial nomenclature? (2)
Ans: Binomial nomenclature is a method of giving two Latin names to organisms: genus and species. Carl Linnaeus developed it and helps in universally identifying and classifying organisms. This system avoids confusion caused by familiar names and ensures consistency in scientific naming.
3. What is taxonomy? (2)
Ans: Taxonomy is the science of classification of organisms according to their traits and their evolutionary history. It helps in understanding relationships between species and organizing biological diversity. Taxonomy follows a hierarchical system, including domains, kingdoms, phyla, classes, orders, families, genera, and species.**Question 4**
1. What is the scientific name of modern humans? (1)
Ans: *Homo sapiens*
2. Name two characteristics of *Homo sapiens* that help them with movement and tool use. (2)
Ans: Homo sapiens are bipedal, meaning they walk on two legs, which allows them to move efficiently. They also have opposable thumbs, which allow them to grasp and use tools easily.
3. What are the two advantages of having a large brain case? (2)
Ans: A large brain allows humans to produce complex speech, which makes it easier to communicate, share ideas, and pass on knowledge. It also enhances problem-solving, creativity, and decision-making, allowing humans to survive in different environments and develop advanced technology.

Question 5

1. What are the three domains of life? (1)

2. 3. Ans: There are three domains of life, namely Eukarya, Bacteria, and Archaea.

Why do we use scientific names rather than common names? (2)

Ans: Scientific names prevent confusion caused by multiple common names in different languages and regions. They provide a standardized, universally accepted naming system that helps scientists accurately identify and classify organisms worldwide.

What is phylogenetic classification? (2)

Ans: Phylogenetic classification groups organisms according to evolutionary relationships based on genetic material such as rRNA. It shows how species have evolved from common ancestors over time. This method helps to understand the evolutionary history and genetic connections between organisms.