G. Answer the following questions in brief:

Q1. Distinguish living things from non-living things on the basis of the following:

a) **growth**
b) **reproduction**
c) **energy production**

Answer:

Characteristics	Living	Non-Living
Growth	They grow. Living things mature and grow through different stages of development. Living things grow from within	Non-living things "grow" by accretion. It occurs through adding materials externally. For example, A snowball may increase in size due to the accumulation of smaller units of its own on its outer surface. Non-living things don't grow on their own
Reproduction	Produces offspring of their own kind through the process of reproduction, wherein genetic information is passed from the parents to the offspring.	Fundamental life processes such as reproduction, nutrition, excretion, etc. are absent in non-living things.
Energy Production	Metabolic reactions constantly occur in all living things.	There are no metabolic reactions in Non-living things.

Q2. Give reasons: the process of excretion is crucial to living organism.

Answer: Reasons are following:

1. Excretion is the process of removal of toxic waste from the body.
2. It is done to prevent accumulation of harmful substances in the body.
3. Plants eliminate harmful gases, stores certain wastes and by diffusion releases metabolic waste in the soil.

Q3. In what ways seeds are important to plants?

Answer: Plants produce flowers to make seeds. The seed contains the embryo that will later grow into a new plant which ensures the continuation of the species.

Q4. How is the process of growth different from that of development?

Answer: Growth is defined as the development of a person in weight, age, size, and habits.

On the other hand, **development** is defined as the process wherein a person's growth is visible in relation to the physical, environmental, and social factors

Growth is limited to a certain level, i.e., a person's height grows till a certain age.

On the other hand, a person is **developing** every single day in terms of his/ her habits, maturity level, IQ, etc.

Growth is an external process.

Development is an internal process.

Growth is limited, i.e., it happens till a particular point in time.

Development takes place throughout life, i.e., it doesn't depend upon time or age.

Q4. Name the three products excreted by plants but commercially used by the men. Also state the purpose for which they are used.

Answer: The three products are:

1) Plants exhibit oxygen at the time of photosynthesis which is an absolute requirement for human beings to survive.
2) Some waste products of plants including gum, resin, and latex of rubber are very useful for humans.
3) Tannin is used in making tea which is a waste product in plants stored in leaves and bark.

Q5. How does pattern of growths in plants differ from that of animals?

Answer: We know that plants keep growing, but animals stop growing until a certain period; it grows for a definite period and stops. Growth in plants is localized to certain regions such as root, leaves. Growth in animals is diffused, it takes place in body and active regions.

Q6. How do the sense organs help us to survive in our environment?

Answer: Our sense organs plays a very important role in our everyday lives as they allow us to see, feel , taste, touch and hear which help us to survive in our environment. Explanation: our eyes help us to see the beautiful trees and many things. Our skin helps us to feel cold, warm and when we get hurt we feel the pain

H. Answer the following questions in detail.

Q1. List the various characteristics of living beings, which according to you are more essential in distinguishing the living from the non-living things.

Answer: The characteristics of living things are as follows:

(i) **Cellular structure**: The body of all the living things is made up of cells.

(ii) **Movement**: All the living things show movement.

(iii) **Responsiveness to stimuli**: All the living things respond to the stimuli received from the surroundings. This characteristic of living things is known as responsiveness to stimuli.

(iv) **Growth**: All the living things such as plants and animals grow. However, animals grow for a definite period of time while plants continue to grow as long as they live.

(v) **Respiration**: Respiration is a continuous process in all the living things.

(vi) **Reproduction**: A living organism produces another living organism of its own kind by the process of reproduction.

(vii) **Excretion**: The process of passing out waste substances from the body is called excretion. All living things exhibit the process of excretion.

(viii) **Death**: Every living thing has a definite life-span after which death occurs in all the living things.

Q2. What is life span? What could be the consequences if living organisms do not die?

Answer: life span, the period of time between the birth and death of an organism.

Then the world would definitely become a populated place, with very less space. And resource like food would extinct because of excess consumption and there would be so much pollution. And also life cycle would either be damaged or it would not be stable. The resources useful to living organism are limited and with the increase in population the resources will consumed at fast pace and slowly nothing will be left to consume. There will be scarcity of resources like electricity, food, fuel, water, space etc.

Q. Explain the difference between the growth of plants and animals

Answer: The difference between the growth of plants and animals are as follows:

	Growth of animals	Growth of plants
1.	Growth of animals takes place for a limited period of time.	There is no time-limit for the growth of plants.
2.	Growth takes place in all the body parts.	Growth takes place in specific parts.

Q3. Living being responded to various stimuli. Explain using two examples. Pick any two examples from your daily lives (not mentioned in your text) to further illustrate this phenomenon.

Answer: Yes, its true.

The ability of an organism or organ to respond to external stimuli is called sensitivity. eg:- When you touch a hot object/sharp object you pull back your hand. Sunflower moves in the direction of the sun. Watering of mouth when we see delicious food. Closing of eyes when we see anything coming towards it. When we get a bad smell we close our nose. Some small plants close their leaf when we touch them. All these are examples of response to stimuli.

(All living things are able to respond to stimuli in the external environment. For example, living things respond to changes in light, heat, sound, and chemical and mechanical contact. To detect stimuli, organisms have means for receiving information, such as eyes, ears, and taste buds.)

Q4. Why do living organisms reproduce? What are the different ways by which they do so? What will happen if living organisms fail to reproduce?

Answer: Reproduction is necessary for living things because it enables them to create offspring and continue their population. Through reproduction, they pass on their genetic information to the next generation. This ensures that their species continues to exist on Earth which is why the organism reproduces.

There are two main forms: sexual and asexual reproduction. In sexual reproduction, an organism combines the genetic information from each of its parents and is genetically unique. In asexual reproduction, one parent copies itself to form a genetically identical offspring.

All living organisms reproduce so that they can make more of themselves.

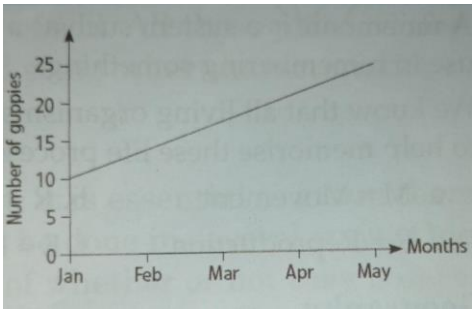
Reproduction ensures the continuity of species.

If organisms stop the process of reproduction their species will be wiped off from the earth.

Q5. Plants do not sweat or pass urine. How they get rid of extra water?

Answer: Plants get rid of excess water by the process of transpiration. Transpiration is the evaporation of water into the atmosphere from the leaves and the stems of the plant (exposed parts of the plant).Transpiration is the release of water from the stomatal openings of the leaves through the evaporation process. Excess water in plants is lost in the water vapour form.

Q6. Saket put ten guppies into a fish tank hand fed them every day. He did not put any more fish into the aquarium. The graph here shows how the number of fish in the tank changed in a few months.



The graph shows that living things
a. grow
b. need food
e. move
d. reproduce

Q7. A car moves when filled with fuel and the engine is started by the driver. It changes direction of its own when the steering wheel is moved by the driver. Is the car living or non-living?

Answer: A car is not living because:

- A car is not made up of cells. It is made up of the atoms and molecules of steel, plastic, etc.
- A car does not grow.
- A car cannot respond to stimulus.
- A car cannot reproduce.

Extra Questions:

Q1. Name some features that are common to both living and non-living things.

Answer: The common features of living and non-living things are as follows:

1. Living as well as non-living things are composed of matter.

2. Both living and non-living things are formed of certain structural units. In living things these structural units are cells, whereas in non-living things, these units are molecules or atoms.

Q2. What is the difference between the structural units of living things and those of non-living things?
Answer: The basic structural unit of a living thing is a cell, whereas molecules and atoms form the structural units of non-living things. A cell can perform all the biological processes required for the perpetuation of life. Molecules or atoms, on the other hand, by themselves do not contribute to life.

Q3. Name a living thing that does not move and a non-living thing that moves.
Answer: Plants are living organisms that do not move from one place to another. A car is non-living thing that can move from one place to another.

Q4. Give two examples each of living thing that:
a. start life as single cells but develop more cells
b. never have more than one cell
Answer:
a. Living organisms such as humans and dogs begin their life as a single cell (zygote) and later develop more cells.
b. *Amoeba and Paramecium* exist as single cells throughout their lives.

Q5. How is growth in a crystal different from the growth in your body?
Answer: In a crystal, growth occurs by the addition of materials from external sources. However, growth in our body occurs within the body by division of cells inside the body. Thus, the growth of crystal is determined by external materials whereas, the growth of our body depends on internal materials.

Q6. If a seed is inserted upside down into soil, in which direction will its stem and roots grow? Which feature of living thing does this show?
Answer: The roots of a seed that is inserted upside down in the soil will grow downwards toward the Earth and the stem will grow upwards away from the Earth. Thus, the direction of growth of roots and stem does not change if a root is inserted upside down in the soil. This feature suggests that all living organisms respond to stimulus. The response in this case is governed by the gravity.

Q7. What is the main function of respiration in living things?
Answer: The primary function of respiration is to provide energy to the living things. Living things obtain oxygen by respiration, which is used for the oxidation of food to release energy. This energy is used by living things to perform all functions.

Q8. Which of these grow throughout their life–plants or animals?
Answer: Animals generally stop growing after reaching a certain age or size. However, plants continue to grow throughout their life.

Q9. What is the process of removal of waste products from the body called?
Answer: The process of removal of waste products from the body is known as excretion.

Q10. Name a one-celled living organism.

Answer: *Amoeba* is an example of a one-celled (unicellular) living organism.

Q11. Give an example of movement in plants.

Answer: Example of movement in plants: A sunflower turns its face towards the sun due to phototropism.

Q12. What are cells? Are all living things made up of cells?
Answer: Cells are the fundamental units of all living organisms. Yes, all living things are made up of cells. In addition, some living organisms are just single celled (unicellular organisms).

Q13. There is some growth in unicellular organisms. How do they grow?
Answer: Unicellular organisms show some growth by an increase in the size of the single cell that constitutes the organism.

Q14. Give an example of a stimulus and a response.
Answer: Example of a stimulus and a response: If you accidentally touch a hot object, you automatically withdraw your hand. The heat of the hot object is the stimulus and you, withdrawing your hand is the response to the stimulus.

Q15. All living things take in oxygen. What function does oxygen perform in the body?
Answer: The oxygen taken in by living things during breathing is combined with the food that is digested by them to produce energy.

Q16. Name three waste products that we excrete.
Answer: The three waste products that we excrete are:

1. Sweat
2. Urine
3. Exhaled air

Q17. Explain with an example what is meant by 'living things respond to stimuli'.

Answer: Living things respond to changes in their environment. For example, if you touch the leaves of the *Mimosa* (touch-me-not) plant, the leaves droop. In this case, the plant is responding to the stimulus of touch by drooping its leaves.

Q18. How do living things grow? Some non-living things also grow. How is their growth different from the growth of living things?
Answer: Living things grow by the division of cells. Unicellular organisms such as *Amoebae* grow by an increase in the size of the single cell that makes up the organism.
Non-living things grow by the addition of material from outside. For example, a pile of sand will grow if more sand is added to it.

Q19. List three ways in which living things reproduce, giving one example of each.
Answer: Three ways in which living things reproduce are:

1. Some living things produce buds which grow into new organisms. For example, potatoes produce buds, known as eyes which grow into new potato plants.
2. Mammals such as humans give birth directly to young ones.
3. Some snakes, birds and crocodiles lay eggs and the young ones hatch from the egg.

Q20. List four different ways in which organisms carry out exchange of gases for respiration, with one example of each.

Answer: All living organisms exchange gases with the environment. The means are as follows:

1. Fishes respire using their gills.
2. Earthworms use their skin for respiration.
3. Insects such as cockroaches breathe through several tracheal tubes in their bodies.
4. Humans and many other animals such as cows, goats etc. respire through external nostrils, which supplies air to their lungs.

Q21. Explain phototropism and geotropism in plants. Are there any similar examples in the animal world also?

Answer: If a plant is potted near a window, its stem will bend toward the light as it grows. The growth of a plant towards light is known as phototropism. In the same way, the roots of plants grow towards the earth and the stem grows in the opposite direction. This is an example of geotropism.

In animals, cockroaches and earthworms show negative phototropism. They move away from light. In the same way, *Paramecium* swims in the opposite direction of the Earth's gravity and shows negative geotropism.

Q22. Explain giving examples what you mean by a 'species'.

Answer: Each type of living organism has many individuals which are broadly similar to each other. Individuals may differ slightly but their behaviour, habits or appearance are quite similar. Such a group constitutes a species. Members of a species inhabit the same environment, eat the same kind of food and reproduce among themselves.

For example, all pigs are a species, humans form a species, oak trees are a species of trees etc.

Q23. Plants take in oxygen and give out carbon dioxide during respiration all the time. Why do we then say that plants supply oxygen to the air?

Answer: During the day, plants use carbon dioxide from the air for photosynthesis and give out oxygen. The amount of oxygen given out by a plant during photosynthesis far exceeds the amount of oxygen consumed by the plant and converted into carbon dioxide by respiration. Therefore, we say that plants supply oxygen to the air.

Q24. Are living things matter?

Answer: All living things have a mass and they occupy volume. Therefore, all living things are matter.

Q25. Why does the population of animals living in jungles not increase as quickly as the human population does?

Answer: In jungles, there are many pressures for survival. The most important of which is finding of food and water. Humans have managed to domesticate animals, farm for food crops, vegetables and fruits and harness rivers to provide water. Thus, humans have very little limitations in terms of food and water. Further, humans have access to medical care to cure diseases that may kill animals in the jungle. As a result, human population increases much more quickly than the population of animals living in jungles.

Q26. Cells are made up of molecules. Why then do we say that the structural unit of a living thing is a cell, and not a molecule?

Answer: Living organisms show specific characteristics such as growth, response to stimulus and other life functions. The cell is the basic unit which shows all the life functions. However, molecules do not show the basic life functions. Molecules are the ingredients of life, but they are not alive, cells.

As a result, the cell is the unit of a living being.