

8th The cell living science Question answer

A. MULTIPLE-CHOICE QUESTIONS: Choose the most appropriate answer.

1. Which of these is multicellular?

- a. Paramecium b. Amoeba c. bacteria d. mushroom

2. The egg of a hen is a

- a. cell. b. tissue c. organ d. organ system

3. Which of these is not present in an animal cell?

- a. mitochondria b. nucleus c. cell membrane d chloroplasts

4. Which of these is the control centre of the cell?

- a. nucleus b. cytoplasm c. mitochondria d. protoplasm

5. Which organelles are responsible for energy production in a cell?

- a. vacuoles b. chloroplasts c. mitochondria d. Golgi bodies

6. Which of these is not stated by the cell theory?

- a. Cells are the basic structural units of living organisms. b. All cells are identical.

c. New cells are formed due to division in old cells.

d. The way an organism functions depends on the way the cells work.

7. In which of these does a single cell NOT perform all life functions?

- a. Amoeba b. mosquito c. bacteria d. Euglena

8. Which of these unicellular organisms has no definite shape?

- a. Amoeba b. Paramecium c. Euglena d. bacteria

Answer: 1. d 2.a 3.d 4.a 5. c 6. d 7. b 8. a

B. VERY SHORT-ANSWER (QUESTIONS: Give one-word answers.

1. All living organisms are made up of one or more -----.

2. Which is the largest known single cell?

3. What is the jellylike substance present in cells called?

4. The cell membrane which surrounds the cell does not allow anything to pass through it. True or false?

5. The cytoplasm and the nucleus together make up the

- Name the cell organelles that help to get energy from food.
- Which of these has a cell wall—plant cell or animal cell?
- Name the process by which new cells are formed. Which structure in the nucleus is a storehouse for information needed by the cell to function?
- Plant cells have large vacuoles as compared to animal cells. True or false?

Ans: 1. cells 2. An ostrich egg 3. Cytoplasm 4. False 5. protoplasm 6. Mitochondria

7. Plant cell 8. Cell division 9. Genes 10. protoplasm

C. SHORT-ANSWER QUESTIONS (TYPE I): Answer in a sentence or two.

- What are the 'building blocks of life'? Why are they so called?

Ans: Cells are the building blocks of life. They are so called because all living things are made up of one or more cells.

- Differentiate between unicellular and multicellular organisms.

Ans: Organisms which are made up of only one cell are called unicellular organisms. eg. amoeba.

Organisms which are made up of more than one cell are called Multicellular organisms eg. man

- What is cytoplasm?

Ans: Cytoplasm is a jelly-like substance that makes up most of the inside of a cell. All life functions take place in the cytoplasm. It is divided into two parts:

(i) Cytosol: It is the soluble part of the cytoplasm and (ii) Cell organelles.

- What do you mean by protoplasm?

Ans: The nucleus and the cytoplasm together make up living substance of the cell and referred as protoplasm .

- What is a tissue?

Ans: A group of cells similar in functions is called tissue cells. For example muscular tissue which help in movement of our body.

- What are organelles?

Ans: Small living structures present in the cytoplasm of a cell which perform different function are called organelles eg. Mitochondria that oxidised food to release energy.

D.SHORT-ANSWER QUESTIONS (Type II): Answer in about 30 words.

- What are the lower levels of organization in a multicellular organism? Are these levels also present in unicellular organisms?

Ans: The lower levels of organization in a multicellular organism are as follows:

Cells -> Tissues -> Organs -> Organ Systems ---> Organism

These levels are not present in unicellular organisms

2. Draw a labelled diagram to show the general structure of a cell. [see book]

3. What are the differences between plant and animal cells?

Ans: Plant Cell (i) Large in size. (ii) Cell wall is present (iii) Plastids are present. (iv) Plant cell usually has one or two large vacuoles.

Animal Cell (i) generally, small in size. (ii) Cell wall is absent. (iii) Plastids are absent. (iv) Vacuoles are either absent or are very small.

4. What is meant by the term cell division? Why is cell division necessary?

Ans: The process by which new cells are formed from the old existing cells are known as cell division. The new cells formed in this way are known as daughter cells.

Cell division is necessary: (i) for replacement of dead cells (ii) for the growth of an organism.

E. LONG-ANSWER QUESTIONS: Answer in about 60 words.

1. What are the main points of the cell theory of life?

Ans: 1. The main points of the cell theory of life given by M. Schleiden and T. Schwann are:

(i) All living things are made up of cells

(ii) All cells are similar in their basic structure and function but are not identical. They differ in size and structure.

(iii) New cells are formed due to division in old cells.

(iv) The organization of cells in the body of a living organism determines its structure.

(v) The way an organism functions depends on the way the cells work.

2. What are the functions of the following in a cell?

a. cell membrane

b. cytoplasm

c. nucleus

d. chromosomes

e. mitochondria

f. vacuoles

Ans: The functions of the following in a cell are:

(a) Cell membrane: (i) It protects the cell and gives it a shape. (ii) It allows water, minerals and some other necessary substances to pass through it.

(b) Cytoplasm: (i) It acts as a store of vital chemical molecules such as amino acids, glucose, vitamins, ions, etc.

(ii) All life functions take place in the cytoplasm.

(c) Nucleus: (i) It controls all metabolic activities of cell. (ii) It regulates cell cycle and directs growth. (iii) It also transmits the hereditary characters from parents to offspring.

(d) Chromosomes: Chromosomes carry genes which contain all the information needed by the cell to function and to reproduce further cells of the next generation. Thus, genes transfer characteristics from the parent to the offspring.

(e) Mitochondria: They oxidize food to provide energy. Thus, they are called powerhouse of the cell.

Vacuoles: (i) They store food, water and wastes. (ii) They help to maintain the osmotic pressure in a cell.

(iii) They provide turgidity and rigidity to the plant cells.

3. With the help of examples, show the variation in shapes and sizes of cells. `

Ans: Cells have different jobs to do, and therefore have different shapes and sizes.

For example, nerve cells have fibres that may be more than one meter long. Messages pass from one nerve cell to another along these fibres.

Muscle cells are long and thin. This helps the muscle cells in expansion and contraction. White blood cells can change their shape, and this helps them to destroy germs. Plant cells located on the outer part of the stem have thick walls for support. Some cells in plants are used to store food, and these cells are larger than other cells.

HOTS QUESTIONS: Think and answer.

1. In general, cell sizes are not related to the size of an organism. However, will there be a difference in the length of the nerve cells in a rat and a giraffe?

Ans: Since the spinal cord of a giraffe is much longer (up to 2.6 m) than that of a rat, the nerve cells are also longer.

2. White Blood Cells can squeeze through walls of blood vessels and get into intercellular spaces to fight against germs. Which property of WBCs allows them to do this?

Ans: White blood cells have the ability to change their shape. This helps them to squeeze through walls of blood vessels and get into intercellular spaces.

3. Why do plant cells need a cell wall, and animal cells do not?

Ans: Plant cells need a cell wall to maintain cell shape and rigidity. This rigidity allows plants to stand upright without the need for bones. In other hand animals have skeletons for this purpose and do not need a cell wall.

Also absence of a cell wall gives animals' greater mobility. Plants do not need to move around.

4. Why do you think parents and doctors get very worried if a child gets a head or spinal injury?

Ans: Most nerve cells cannot be replaced by cell division once they die. Therefore the central nervous system cannot be healed if there is an injury to it. That is why an injury to the nervous system is very worrying. (Recent research has shown that some nerve cells can be replaced by the body.)

5. Living things are made up of cells while non-living things are made up of atoms and molecules. Do you agree? Give reasons.

Ans: I do not entirely agree since living and non-living things are both made up of atoms and molecules. The difference is that the basic structural units are different — cells in living and atoms or molecules in non-living. Cells themselves are made up of atoms and molecules, and one or more cells together make up a living thing.

Date	Event
1665	<p>Cell first observed</p> <p>Robert Hooke, an English scientist, discovered a honeycomb-like structure in a cork slice using a primitive compound microscope. He only saw cell walls as this was dead tissue. He coined the term "cell" for these individual compartments he saw.</p>
1670	<p>First living cells seen</p> <p>Anton van Leeuwenhoek, a Dutch biologist, looks at pond water with a microscope he made lenses for.</p>
1683	<p>Miniature animals</p> <p>Anton van Leeuwenhoek made several more discoveries on a microscopic level, eventually publishing a letter to the Royal Society in which he included detailed drawings of what he saw. Among these was the first protozoa and bacteria discovered.</p>
1833	<p>The center of the cell seen</p> <p>Robert Brown, an English botanist, discovered the nucleus in plant cells.</p>
1838	<p>Basic building blocks</p> <p>Matthias Jakob Schleiden, a German botanist, proposes that all plant tissues are composed of cells, and that cells are the basic building blocks of all plants. This statement was the first generalized statement about cells.</p>
1839	<p>Cell theory</p> <p>Theodor Schwann, a German botanist reached the conclusion that not only plants, but animal tissue as well is composed of cells. This ended debates that plants and animals were fundamentally different in structure. He also pulled together and organized previous statement on cells into one theory, which states: 1 - Cells are organisms and all organisms consist of one or more cells 2 - The cell is the basic unit of structure for all organisms</p>
1840	<p>Where does life come from</p> <p>Albrecht von Roelliker discovers that sperm and eggs are also cells.</p>
1845	<p>Basic unit of life</p> <p>Carl Heinrich Braun reworks the cell theory, calling cells the basic unit of life.</p>
1855	<p>3rd part to the cell theory added</p> <p>Rudolf Virchow, a German physiologist/physician/pathologist added the 3rd part to the cell theory. The original is Greek, and states Omnis cellula e cellula. This translates as all cells develop only from existing cells. Virchow was also the first to propose that diseased cells come from healthy cells.</p>