

THE FUNDAMENTAL UNIT OF LIFE

Question 1

Why were the scientists not able to observe most of the cell organelles before 1940?

Answer: Before 1940, scientists could view the cell only under a light microscope. The invention of the electron microscope in 1940 enabled the scientists to observe the cell in greater detail.

Question 2

What is the function of the cell wall?

Answer: The cell wall lies outside the plasma membrane and is responsible for providing structural strengths to the plants.

Question 3

Why are lysosomes called digestive bags or suicide bags?

Answer:

- They serve as intracellular digestive system
- They destroy any foreign material inside the cell
- They also remove the worn out and poorly working cell organelles by digesting them to make way for a replacement
- They may even digest away the entire damaged or dead cell containing them

Question 4

Why are peroxisomes mostly found in kidney and liver cells?

Answer: Peroxisomes contain powerful oxidative enzymes, which specialize in carrying out certain oxidative reactions, in order to remove toxic substances.

Question 5

Why are mitochondria also called 'The Power House of cell'?

Answer: Energy in the food molecules is converted here (in the mitochondria) into usable energy and stored as ATP molecules. Hence, they are called the power house of the cells.

Question 6

There would be no plant life if chloroplasts did not exist. Justify.

Answer: Chloroplasts contain the pigment chlorophyll which is responsible for food preparation by photosynthesis. Hence, if there were no chloroplasts then there would not have been plant life.

Question 7

Why is the golgi apparatus called the secretory organelle of the cell?

THE FUNDAMENTAL UNIT OF LIFE

Answer: This is because it packages material synthesized in the ER and dispatches it to intracellular and (plasma membrane and lysosomes) extracellular targets.

Question 8

Why is variation not possible in mitotic division of cells?

Answer: In mitosis, the cell divides into two (each having the same number of cells as the mother cell) giving rise to two identical daughter cells. Hence, variation is not possible.

Question 9

The daughter cell of meiotic division is different from the parent cells. Explain.

Answer: In meiosis, exchange of genes takes place between the two germ cells and hence, the daughter cell will differ from the parent cells.

Question 10

Differentiate between smooth and rough endoplasmic reticulum.

Answer: Differences Between Smooth and Rough Endoplasmic Reticulum

Rough Reticulum (RR)	Smooth Reticulum (SR)
Ribosomes are attached to the surface of the SR	Ribosomes are not present
Used for synthesizing proteins	Used for secreting proteins

Question 11

Give the importance of cristae in mitochondria.

Answer: The finger-like cristae present in the inner-folded membrane greatly increase the surface area of the membrane.

Question 12

Give one similarity and one dissimilarity between plastids and mitochondria.

Answer: Similarity: Their structures are more or less the same.

Dissimilarity: Mitochondria have cristae which are absent in plastids.

Question 13

In many plant cells the nucleus and other cell organelles are pushed near the boundary walls. Explain.

Answer: In plant cells, a single prominent vacuole occupies 90% of the volume of a cell and hence, all the organelles are pushed to the side of the cell.

Question 14

Website: www.scientiatutorials.in ☎ +91 9864920707 E-mail: scientiatutorials@gmail.com

THE FUNDAMENTAL UNIT OF LIFE

Differentiate between the cell of an elephant and a plant cell (2 differences).

Answer: Differences Between the Cell of an Elephant and a Plant Cell

Elephant Cell	Plant Cell
Plastids absent	Plastids present
Posses centrosome with one or two centrioles	Instead two small clear areas called polar caps are present

Question 15

During cell division, the number of chromosomes in a cell becomes half of what it was initially. What type of cell is it? Name the type of cell division.

Answer: It is a germ cell.
The type of cell division is meiosis.

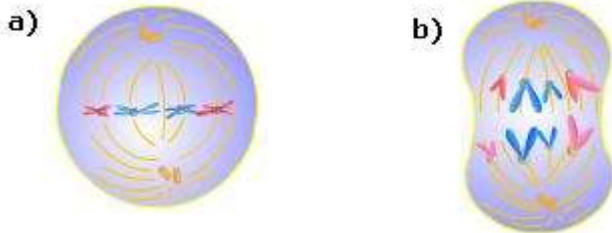
Question 16

Why does not a child exactly resemble his father or mother?

Answer: A child does not exactly resemble his father or mother because the sperm and egg cells undergo meiotic division which leads to variation.

Question 17

Identify the diagrams given below. To which stage of mitosis do they belong? Given reasons.



Answer: a) Metaphase, because the chromosomes have arranged themselves in the equatorial plate.
b) Anaphase, because the sets of daughter chromosomes are being pulled to the opposite poles.

Question 18

In which phase of cell division do the following occur:

- Disappearance of nuclear envelope
- Development of spindle
- Reappearance of nuclear membrane
- Reorganization of nucleus at the poles of the dividing cells

Answer: a) Disappearance of nuclear envelope: Prophase
b) Development of spindle: Metaphase
c) Reappearance of nuclear membrane: Telophase
d) Reorganization of nucleus at the poles of the dividing cells: Anaphase

THE FUNDAMENTAL UNIT OF LIFE

Question 19

Give two characteristics unique to meiotic division.

Answer: Two characteristics unique to meiotic division are:

- It takes place only in germ cells
- Crossing over takes place

Question 20

Identify the odd one out: nucleus, plastid, mitochondria, peroxisomes.

Answer: Plastid is the odd one out. It is the only organelle out of the above not present in animal cells

Question 21

What is a cell?

Answer: A cell is the structural and functional unit of living organisms.

Question 22

What are the chief components of the nucleus?

Answer: The chief components of the nucleus are:

- Chromatin
- Nucleolus

Question 23

Name two components that the cell membrane encloses.

Answer: The two components that the cell membrane encloses are:

- Nucleus
- Cytoplasm

Question 24

What are the two types of endoplasmic reticulum (ER)?

Answer: The two types of endoplasmic reticulum are:

- Rough ER
- Smooth ER

THE FUNDAMENTAL UNIT OF LIFE

Question 25

Which organelle is most vital for the survival of a cell?

Answer: Nucleus is most vital for the survival of a cell.

Question 26

Define the endoplasmic reticulum.

Answer: It is a membrane network enclosing a fluid filled lumen which almost fills up the intracellular cavity.

Question 27

Define golgi apparatus.

Answer: Golgi apparatus consists of a set of membrane bound, fluid filled vesicles, vacuoles and flattened closed sacs called cisternae which are placed one on top of the other in parallel rows.

Question 28

Who discovered cells?

Answer: Robert Hooke discovered cells.

Question 29

What is the cell theory? Who proposed it? When?

Answer: All plants and animals are composed of cells and that the cell is the basic unit of life. Cell theory was proposed by M.Schleiden in 1838 and T.Schwan in 1839.

Question 30:

What are lysosomes?

Answer: Lysosomes are simple, tiny spherical sac-like structures evenly distributed in the cytoplasm.

Question 31

What are peroxisomes?

Answer: They are small spherical organelles containing powerful oxidative enzymes. They are bound by a single membrane and are mostly found in kidney and liver cells.

Question 32: *Name the important function of peroxisomes.*

Answer: Important function of peroxisomes is detoxification or removal of toxic substances.

Question 33

THE FUNDAMENTAL UNIT OF LIFE

What is the difference between vacuoles of plant and animal cells?

Answer: In plant cells they are large and permanent and in animal cells they are small and temporary.

Question 34

Which cell organelle is responsible for release of energy as ATP?

Answer: Mitochondria is responsible for release of energy as ATP.

Question 35

Name the four phases of mitosis.

Answer: The four phases of mitosis are:

- Prophase
- Metaphase
- Anaphase
- Telophase

Question 36

How many daughter cells are produced in the case of meiosis?

Answer: Four daughter cells are produced in the case of meiosis.

Question 37 *When and how is the cell plate formed?*

Answer: A cell plate is formed during telophase of mitosis when two cells are separated.

Question 38 *In meiosis, why is a reduction in number of chromosomes necessary in the germ cell?*

Answer: If the gametes are diploid (2n), then on fertilization the zygote will contain twice the number of diploid chromosomes (4n). To avoid this, germ cells undergo reduction division.

Question 39 *Give two properties that are unique to meiosis.*

Answer: The two properties that are unique to meiosis are:

- Chromosome number in gametes becomes half
- Exchange of genes results in variation

Question 40 *Give two differences between Meiosis and Mitosis.*

THE FUNDAMENTAL UNIT OF LIFE

Answer:

Mitosis	Meiosis
Two daughter cells are produced	Four daughter cells are produced
Crossing over does not take place	Crossing over takes place