	INDIAN SCHOOL AL WADI AL KABIR	
Class: XI	**DEPARTMENT OF SCIENCE 2024 – 25** **SUBJECT: BIOLOGY**	**Date :16/04/2024**
Worksheet No: 1 **WITH ANSWERS**	**CHAPTER: CELL: THE UNIT OF LIFE**	**Note:** **A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

OBJECTIVE TYPE QUESTIONS (1 MARK EACH)

Q1. Who discovered the cell membrane?
a) Theodore Schwann
b) Schleiden and Schwann
c) Robert Hooke
d) None of the above

Q2. Who gave the cell theory?
a) Theodore Schwann
b) Matthias Schleiden
c) Both a and b
d) None of the above

Q3. Which of the following cell organelle remains enveloped by a single unit membrane?
a) Chloroplast
b) Mitochondria
c) Nucleus
d) Lysosomes

Q4. The nucleolus is the site of formation of
a) Spindle fibers
b) Ribosomes
c) Chromosomes
d) Peroxisomes

Q5. Which one of the following combinations is mismatched?
a) Cell wall - Protective, determines shape, prevents from bursting.
b) Flagella, Pili, and Fimbriae - Surface structures of bacterial cell
c) Pili - Reproduction
d) Glycocalyx - may be capsule or slime layer.

Q6. Which of the following is not a cell organelle?
a) Ribosome
b) Mitochondria
c) Endoplasmic reticulum
d) Deoxyribonucleic acid

Q7. The smallest cells are.
a) Bacteria
b) Protozoa
c) Mycoplasmas
d) Euglena

ASSERTION AND REASON (1M)

A. Assertion and Reason are true, and the reason is the correct explanation.
B. Assertion and Reason are true, but the reason is not the correct explanation.
C. Assertion is a true statement, but Reason is false.
D. Assertion and Reason are false statements.

Q8. Assertion: The number of cells in a multicellular organism is inversely proportional to size of body.
Reason: All cells of biological world are alive.

Q9. Assertion: Living organisms possess specific individuality with the definite shape and size.
Reason: Both living and non-living entities resemble each other at the lower level of organization.

Q10. Assertion: Smaller cells are usually metabolically active cells.
Reason: Smaller cell nucleocytoplasmic ratio and surface volume ratio is higher.

SHORT ANSWER TYPE QUESTIONS (2 MARKS EACH)

Q11. What is the importance of a vacuole in a plant cell?

Q12. What is a satellite chromosome?

Q13. What is a mesosome?

Q14. What are histones? What role do they play?

LONG ANSWER TYPE QUESTION (3 MARK EACH)

Q.15.How many types of plastids are there in a plant cell?

Q.16.Who Discovered the cell?

CASE STUDY BASED QUESTIONS (4M)

A Journey to the Center of Our Cells

It was by accident that Antoni van Leeuwenhoek, a Dutch cloth merchant, first saw a living cell. He'd begun making magnifying lenses at home, perhaps to better judge the quality of his cloth. One day, out of curiosity, he held one up to a drop of lake water. He saw that the drop was teeming with numberless tiny animals. These animalcules, as he called them, were

everywhere he looked—in the stuff between his teeth, in soil, in food gone bad. A decade earlier, in 1665, an Englishman named Robert Hooke had examined cork through a lens; he'd found structures that he called "cells," and the name had stuck. Van Leeuwenhoek seemed to see an even more striking view: his cells moved with apparent purpose. No one believed him when he told people what he'd discovered, and he had to ask local bigwigs—the town priest, a notary, a lawyer—to peer through his lenses and attest to what they saw.

Today, we take for granted that we are made of cells—liquidy sacs containing the Golgi apparatus, the endoplasmic reticulum, the nucleus. We accept that each of us was once a single cell, and that packed inside it was the means to build a whole body and maintain it throughout its life. "People ought to be walking around all day, all through their waking hours, calling to each other in endless wonderment, talking of nothing except that cell," the physician Lewis Thomas wrote, in his book "The Medusa and the Snail." But telescopes make more welcome gifts than microscopes. Somehow, most of us are not itching to explore the cellular cosmos.

Cell biologists know that the rewards for comprehension are substantial. The cell is the fundamental unit of life, shared by plants, animals, and bacteria. If we understood the cell in its entirety, biomedical progress would accelerate dramatically, the same way nuclear science did once physicists understood atoms. The trouble is that the interiors of cells are too small to easily see. Cells are hard to work with under controlled conditions, and incredibly intricate. A poster hanging in many labs shows the Roche Biochemical Pathways diagram, a flowchart of cellular metabolism. It's oddly beautiful—like an engineering blueprint beamed down from an alien civilization.

Q17. What are the different observations of Van Leeuwenhoek after observing a drop of water from the lake?

Q18. Why is the cell termed as the 'functional unit of life'?

Q19. Why do you think the interiors of a cell is difficult for observation?

Q20. Choose the correct answer:

a) Nucleus contains Chromosomes of different types.
b) Nucleoplasm is the matrix found on the surface of the nucleus.
c) Metacentric Chromosomes are having unequal chromosomal arms.
d) Most human chromosomes are metacentric.

VERY LONG ANSWER TYPE QUESTIONS (5 MARK EACH)

Q.21.List out the functions of a Cell.

Q.22.What are Thylakoids?

Q.23.Define cell theory?

Q 24. Explain the different types of chromosomes with a well labelled diagram.

ANSWER KEY

1) a) Theodore Schwann
2) c) Both a and b
3) d) Lysosomes
4) b) Ribosomes
5) c) Pili - Reproduction
6) d) Deoxyribonucleic acid
7) c) Mycoplasmas
8) d
9) b
10) a

A.11. The vacuole is a membrane-bound space in the cytoplasm of a plant cell. It contains sap, water, excretory products, and other materials not useful for the cell. Vacuoles occupy 90% of the cell volume during osmosis. They maintain the turgor pressure against the cell wall thereby maintaining the shape of the cell and cell fluid balance.

A.12. The chromosomes that have an additional or secondary constriction at the distal part of the arm formed by a chromatin thread are known as satellite chromosomes. These appear as an outgrowth or a small fragment. These are also known as marker chromosomes. The chromosomes 13, 14, 15, 16, 21, and 22 are satellite chromosomes.

A.13. Mesosome is formed by the extension of the plasma membrane into the cell in prokaryotes. It facilitates cell wall formation, DNA replication, and distribution of DNA to the daughter cells. It also helps in respiration and secretion and increases the surface area of the plasma membrane and enzymatic content.

A.14. Histones are alkaline proteins found inside the nucleus of eukaryotic cells. They package the DNA into structural units called nucleosomes. They are the main proteins in chromatin.

A.15.There are three types of plastids- chloroplast, chromoplast and leucoplast.

A.16. Robert Hooke, an English natural philosopher, was the first person to discover the cell in the year 1665. Later, Antonie van Leeuwenhoek, a Dutch scientist observed cells under another compound microscope.

A17. He saw that the drop was teeming with numberless tiny animals. These animalcules, as he called them, were everywhere he looked—in the stuff between his teeth, in soil, in food gone bad.

A18. It can perform all the functions of life namely- reproduction, excretion, protein production etc.

A19. It is too small to observe and at that time microscope was not developed that much.

A20. a) Nucleus contains Chromosomes of different types.

A.21.The cell is the fundamental unit of life. It performs various important functions, which are essential for both the growth and development of an organism. Listed below are few of the functions of a Cell.

- Plays a vital role in reproduction
- It facilitates growth by cell division.
- The cell provides support and structure to the body.
- Provides energy and allows the transport of substances.

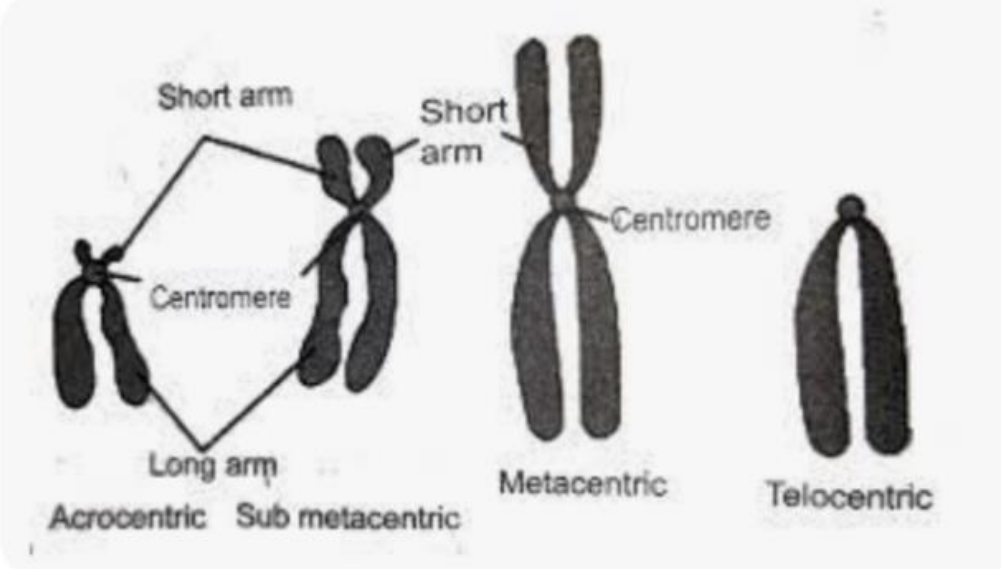
- Includes different organelles associated with different functions within the cell.

A.22.Thylakoids are the membrane-bound organelles present within the chloroplasts of a plant cell. They are the site of the light-dependent reactions of photosynthesis.

A.23. The cell theory was proposed by the two scientists – Theodor Schleider and Matthias Schwann in the year 1839. According to this theory:

- A new cell exists from pre-existing cells.
- All cells have the same basic chemical structure.
- The cell is the structural and functional unit of all living things.
- Hereditary information is passed from parent cell to child cell.
- The fundamental biochemical reactions of life take place within cells.
- All living organisms existing on the planet earth are composed of one or more cells.

A24.



PREPARED BY: *Ms ARUNIMA NAIR*	*CHECKED BY* *HoD SCIENCE*