



BIOLOGY

SAMPLE BOOK



BIOLOGY



I'm the
Intelli Kid

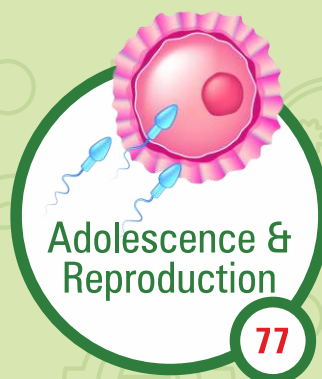
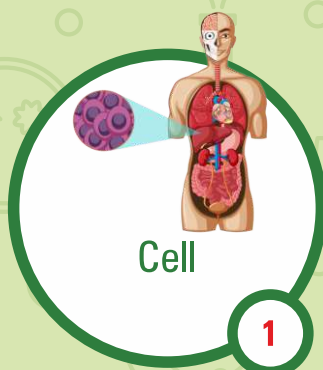
and
I'm becoming the
Best Version
of myself with





INDEX

GRADE-8



Experiential Experimental Edutaining



I AM PROGRESSING

(Tick mark the columns after achieving the Learning Milestones)



TOPIC	1 st Learning	Exercise Solving	1 st Revision	2 nd Revision
 Cell				
 Microorganisms				
 Conservation of Plants & Animals				
 Crop Production & Management				
 Adolescence & Reproduction				

BIOLOGY

SAMPLE THEORY

CHAPTER 1

CELL

INTRODUCTION

- Cell is the structural and functional unit of life as all the metabolic activities takes place in a cell.
- The cell is defined as : "A unit of biological activity, delimited by a differentially permeable membrane and capable of self reproduction in a medium free of other living systems".
- Cell is the building block of the living body. They are so minute that they can only be seen with the help of a microscope.
- The branch of biology which deals with the study of cell and its organelles is known as **Cytology**.

DISCOVERY OF CELL

- **Robert Hooke (1665)** : He observed a thin transverse section of cork (which is a part of bark of a spanish oak tree) under self designed microscope.
 - He noticed **honey comb** like compartments. He called these small rooms has "*cellulae*" (sing. *cellula*) now termed as cells.
 - He coined the **term cell**.
 - He wrote a book - **Micrographia**.
 - He actually observed **dead cells**.
- **Anton Van Leeuwenhoek (1674)** was first to observe living cells like bacteria [from tartar of teeth], erythrocytes [fish], sperms and protozoans [E.g. Vorticella].
- **Robert Brown (1831)** discovered nucleus.
- **Johannes E. Purkinje (1840)** gave the term protoplasm.
- **T. H. Huxley 1869** described protoplasm as "**physical basis of life**".

MICROSCOPE

- It is an instrument which is used to study those objects that cannot be seen with the naked eye.
- A microscope has more than one lens.
- The 1st compound microscope was built by **Zacharias Janseen (1590)**.



Compound
Microscope



Magnifying
Glass

CELL THEORY

- The German botanist **M. J. Schleiden** and the British zoologist **T. Schwann** in **1839** gave the cell theory.
- **Rudolf Virchow** stated "**omnis cellula e cellula**", i.e., all cells arise from pre-existing cells.
- Further formalized by the German researcher **Rudolf Virchow** in **1855**. In its modern form, the theory has four basic points:
 - (i) Cell is the basic structural and functional unit of life; all organisms are composed of cells.
 - (ii) All cells are produced by the division of pre-existing cells.
 - (iii) All basic chemical and physiological functions - for example, respiration, growth, movement, immunity, communication, and digestion are carried out by cells.
 - (iv) The activities of cells depends on the activities of subcellular structures within the cell (these subcellular structures include organelles, the plasma membrane, and if the nucleus present).

ORGANISATION OF CELLS IN ORGANISM

- Cells usually group together to make tissues, organs, organ systems and finally organisms.
- **Tissue** : It is a group of cells (generally) of the same size, shape and function. E.g. Muscle tissue, nerve tissue, etc.
- **Organ** : It is a structure that contains more than one type of tissues. E.g. Heart, Brain (in animals), and leaves, roots and stems (in plants).
- **Organ system** : A group of organs working together is called an organ system. E.g. Digestive system.
- **Organism** : The different organ systems working together form an organism.



DO YOU KNOW?

- The study of tissues is known as **histology**.
- **Cell biology** is a branch of biology that studies the different structures and functions of the cells.

BIOLOGY

SAMPLE EXERCISE



EXERCISE

GRADE-8
Cell



Directions: Solve the following multiple choice questions by choosing the most appropriate option.

1. **The figures of cork cells as seen by Robert Hooke were published in his book :**
(1) Origin of Species (2) Plant Kingdom (3) Genra Plantarum (4) Micrographia
2. **The term 'protoplasm' was given by _____.**
(1) Purkinje (2) Dujardin (3) Brown (4) Fischer
3. **Who defined protoplasm as a 'Physical basis of life' ?**
(1) Dujardin (2) Huxley (3) Watson (4) Schwann
4. **Cell theory was propounded by _____.**
(1) Schleiden and Schwann (2) Watson and Crick
(3) Mendel and Morgan (4) Wallace and Darwin
5. **Who first coined the word "cell" ?**
(1) Aristotle (2) Hooke (3) Schwann (4) Leeuwenhoek
6. **The longest cell in human body is _____.**
(1) neuron (2) muscle fibre (3) epithelial cell (4) bone cell
7. **A cell has the following molecules and structures: enzymes, DNA, ribosomes, plasma membrane, and mitochondria. It could be a cell from _____.**
(1) a bacterium (2) an animal, but not a plant
(3) a plant, but not an animal (4) a plant or an animal
8. **The main function of a plasma membrane is to :**
(1) prevent water from entering or leaving
(2) control what goes into and out of the cell
(3) act as a sieve, allowing only lipids to pass
(4) move the cell from place to place
9. **Cell wall is made of _____.**
(1) cellulose in plants (2) chitin in fungi
(3) peptidoglycan in bacteria (4) All of these

10. Cellulose and hemicellulose are the constituents of cell wall which are synthesised by :

- (1) Microbodies
- (2) Smooth endoplasmic reticulum
- (3) Lysosomes
- (4) Golgi apparatus

11. Proteins that are to be used inside the cell are synthesised :

- (1) in the mitochondria
- (2) on the rough endoplasmic reticulum
- (3) on the smooth endoplasmic reticulum
- (4) on free ribosomes

12. The endoplasmic reticulum in a cell probably functions in the :

- (1) protein synthesis
- (2) transport of materials
- (3) Both (1) and (2)
- (4) secretory activities of the cell

13. Golgi apparatus is absent in :

- (1) Liver cells
- (2) Higher plants
- (3) Blue green algae
- (4) Yeast

14. Dictyosomes are :

- (1) Respiratory organelle
- (2) Respiratory vacuole
- (3) Golgi bodies in plant cell
- (4) Clusters of lysosomes

15. Which of the following structure is the functional unit in a Golgi complex ?

- (1) Cisternae
- (2) Thylakoid
- (3) Archooplasm
- (4) Cristae

16. Major function of Golgi body is :

- (1) secretion
- (2) regulation of cell temperature
- (3) ATP synthesis
- (4) protein synthesis

17. Which of the following is not the correct pairing of structure with its function ?

- (1) Golgi complex: breakdown of complex molecules
- (2) Mitochondrion: production of ATP
- (3) Endoplasmic reticulum: synthesis of proteins
- (4) Chloroplast: photosynthesis

18. Eukaryotic cells lacking chloroplasts do not have :

- (1) Ribosomes
- (2) Mitochondria
- (3) Cell wall
- (4) Cell membrane

19. Function of centriole is :

- (1) formation of spindle fibres
- (2) formation of nucleolus
- (3) initiation of cell division
- (4) Both (1) and (3)