DON BOSCO SCHOOL, KOKAR, RANCHI

SUBJECT: BIOLOGY

CLASS 9

Chapter 2 Cell: The Unit Of Life

A. MULTIPLE CHOICE TYPE

1. Which one of the following cell organelles is correctly matched with its function?
Ans- (a) Ribosomes – Synthesis of proteins

2. All life starts as
Ans- (b) a single cell

3.Which one of the following is found both in the cells of a mango plant and a donkey
Ans- (d) cell membrane

4. A plant cell can be identified from an animal cell by the:
Ans- (a) absence of centrosome

5. Plant cell has a cell wall made of :
Ans- (c) Cellulose

6. The cell organelle that helps in respiration of the cell is:
Ans- (a) Mitochondria

B. VERY SHORT ANSWER TYPE

1. Name the part of the cell concerned with the following?

(a) Liberation of energy – Mitochondria
(b) Synthesis of proteins – Ribosomes
(c) Transmission of hereditary characters from parents to offspring – chromosomes
(d) Initiation of cell division- Centrosome
(e) Hydrolytic in function – Lysosomes
(f) Entry of only certain substances into and out of the cell – Cell membrane

2. State whether the following statements are true (T) or false (F)

(a) All animal cells contain a cell wall. – False
(b) The cell wall is made of protein. – False
(c) Centrosome occurs in animal cells. – True
(d) Plant cells contain large vacuoles. – True
(e) Protoplasm is the part of the cell which surrounds the nucleus.-False

(f) Genes are located in chromosomes. – True
(g) Anthocyanins are the pigments of flowers, which are dissolved in cell-sap. –True

3. How many chromosomes pairs are found in human cells?
Ans- 23 pairs of chromosomes are found in human cells.

4. What is the name of the chemical substance which constitutes the genes?
Ans- DNA (Deoxyribonucleic acid) is the name of the chemical substance which constitutes the genes.

5. Match the items in column 'A' with those in column 'B'

Ans- Column A	Column B
(a)Vacuole	(iii)Covered by tonoplast
(b) Nucleolus	(v) Forms RNA
(c) Lysosomes	(i) Intracellular digestion
(d) Anthocyanin	(iv) Dissolved in the cytoplasm
(e) Cristae	(ii) Respiratory enzymes

6. Fill in the blanks:
(a) Lysosome consists of membranous sacs and secretes 40 types of digestive enzymes.
(b) Centriole is surrounded by microtubules, located near the nucleus.
(c) Very thin flexible, living membrane which is differentially permeable, is called Plasma Membrane.
(d) More than 1000 chromosomes are found in the nucleus of certain insects.
(e) Genes are hereditary units.
(f) Leucoplast is a plastid which stores starch.

C. SHORT ANSWER TYPE

1. It is said that the protoplasm cannot be analysed chemically. Why?

Ans- protoplasm cannot be analysed chemically because the chemical composition of protoplasm is very complex. It varies slightly from one cell to another, although the common elements included in the composition of protoplasm such as carbon, hydrogen, oxygen, nitrogen, sulphur, iron and phosphorous are still the same in all the cells.

2. What is the difference between an organ and an organelle?

Ans- Organs of an organism are the parts of the body which have a definite shape and structure and perform specific functions. Organelles are also parts of the cell which have a definite shape and structure and perform specific functions. Organelles have the same status in a cell as the organs have in the entire body of an animal or a plant performing specific functions.

3. Do you think the cells of an elephant would be larger than the cells of a rat? Explain briefly.

Ans - The cells of an elephant would be of the same size as the cells of a rat. The size of cells does not vary within the organisms, however the number of cells varies from one organism to another.

4. Differentiate between the following pairs of terms:

(a) Protoplasm and cytoplasm

Ans- Protoplasm- It is the living matter, the total substance of a living cell, i.e. the cytoplasm and the nucleus.

Cytoplasm- It is a mixture of water and soluble organic and inorganic compounds, in which various cell organelles are embedded.

(b) Nucleolus and nucleus

Ans- Nucleolus- It is a round- shaped nucleoli present inside the nucleus.

Nucleus- It is a dense spherical structure present in the cell that contains a network of thread-like structures called chromatin fibres.

(c) Centrosome and chromosome

Ans- Centrosome- Centrosome is found in an animal cell.

Chromosome- Chromosome are found in the nucleus of both, animal and plant cells.

(d) Cell wall and cell membrane

Ans- Cell wall- It is a non-living rigid layer

-It is made of cellulose

Cell membrane- It is a living, thin, flexible membrane.

- It is made of lipoproteins.

(e) Plant cell and animal cell

Ans- Plant cell- Cell wall is present.

-Centrosome is absent.

- Plastids are present.

Animal cell- Cell wall is absent.

-Centrosome is present.

-Plastids are absent.

(f) Prokaryotes and eukaryotes

Ans- Prokaryotes- Organisms with cells containing a primitive, undefined nucleus are called prokaryotes.

-They contain small ribosomes.

- Examples: Bacteria, blue-green algae

Eukaryotes- Organisms with cells containing a well-defined nucleus with a nuclear membrane are called eukaryotes.

-They contain larger ribosomes.

- Examples: Euglena, Human beings.

5. Mention three features found only in plant cells and one found only in animal cells.

Ans- Three features found only in plant cells are as follows:

(i) Presence of cell wall.

(ii) Presence of large vacuoles.

(iii) Presence of plastids.

One feature found in animal cells:

(i) Presence of centrosome.

6. Why are the cells generally of a small size?

Ans- Cells generally remain small in size because:

(i) To enable different regions of the cell to communicate with each other rapidly for the cell to function effectively.

(ii) To have a large surface area is to volume ratio for greater diffusion of substances, in and out of the cell.

D. LONG ANSWER TYPE

1. What is the cell theory? Who propounded it and when?

Ans- The cell theory states three major points.

(i) The cell is the smallest unit of structure of all living things.

(ii) The cell is the unit of function of all living things.

(iii) All cells arise from pr-existing cells.

Cell theory was propounded by Theodor Schwann and Matthias Schleiden in the year 1839 and was modified by Rudolf Virchow in 1858.

2. Mention any three difference between a living cell and a brick in a wall.

Ans-

Living cell	**Brick in a wall**
(i) Non-rigid living structure	(ii) Rigid non-living structure
(ii) Mainly composed of cellulose	(ii) Mainly composed of soil.
(iii) Freely permeable	(iii) Impermeable

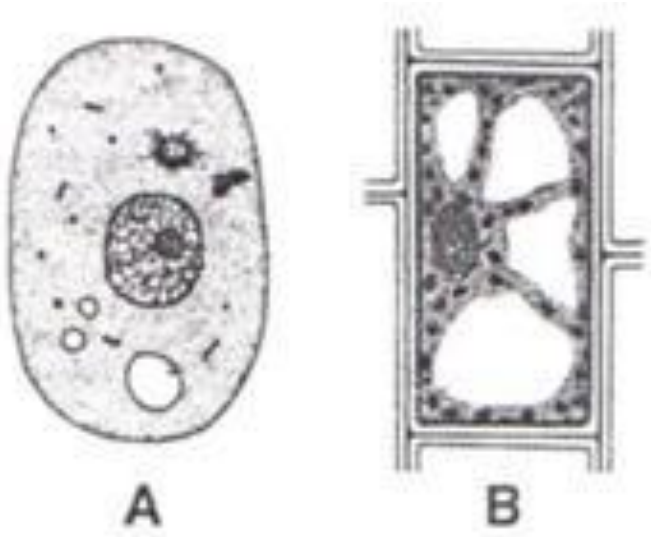
3. Name the plastid and pigment likely to be found in the cells of:

Ans-

Cells	**Plastid**	**Pigment**
(a) Petals of sunflower	Chromoplasts	Xanthophyll
(b) ripe tomato	Chromoplasts	Carotene
(c) Skin of green mango	Chloroplasts	Chlorophyll
(d) Cells of tomato	leucoplasts	No pigment

STRUCTURED/APPLICATION/SKILL TYPE

1. Given below are the sketches of two types of cells A and B



(a) Which one of these is a plant cell? Give reason in support of your answer.

Ans- Fig. B is a plant cell. It has a cell wall and a large vacuole which pushes the nucleus towards the periphery.

(b) List the cell structures which are common to both the types.

Ans-The cell structures which are common to both the types are as follows:

Cell membrane, ribosomes, nucleus, endoplasmic reticulum, lysosomes, Golgi body and mitochondria.

(c) Name the structures found only in plant cells and those found only in animal cell.

Ans- Plastids and cell wall are found only in plant cell. Centrosome is found only in animal cell.

ASSIGNMENTS

1. State the major functions of the following:
(a) Plasma membrane
(b) Ribosome
(c) Lysosome
(d) Mitochondria
(e) Golgi apparatus
(f) Cytoplasm
(g) Asters of centrosome
(h) Chromosomes
(I) Glycogen granule
(j) Vaculoes

2. List any six features found both in plant and animal cells. (Refer page no. 15, Table 2.1)
3. Draw a well labelled diagram of plant cell and animal cell.

4. Define nucleus, protoplasm.
5. Mention at least 6 differences between plant cells and animal cells.
6. Draw a well labelled diagram of a nucleus showing Nuclear membrane, Nucleoplasm, Nucleolus and Chromatin network.

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