

**THE FUNDAMENTAL UNIT OF LIFE**

ASSIGNMENT

**Section 1**

Find the correct option:

1.Chromosomes are made up of

- (a) DNA
- (b) Protein
- (c) DNA and protein
- (d) RNA

2.Which of these options are not a function of ribosomes?

- (i) It helps in manufacture of protein molecules.
  - (ii) It helps in manufacture of enzymes.
  - (iii) It helps in manufacture of hormones.
  - (iv) It helps in manufacture of starch molecules.
- (a) (i) and (ii)
  - (b) (ii) and (iii)
  - (c) (iii) and (iv)
  - (d) (iv) and (i)

3.Which of these is not related to endoplasmic reticulum?

- (a) It behaves as a transport channel for proteins between nucleus and cytoplasm.
- (b) It transports materials between various regions in the cytoplasm.
- (c) It can be the site of energy generation.
- (d) It can be the site for some biochemical activities of the cell.

4.Plasmolysis in a plant cell is defined as

- (a) breakdown (lysis) of plasma membrane in hypotonic medium
- (b) shrinkage of cytoplasm in hypertonic medium
- (c) shrinkage of nucleoplasm
- (d) none of them

5. Which of the following are covered by a single membrane?

- (a) Mitochondria
- (b) Vacuole
- (c) Lysosome

(d) Plastid

6. The proteins and lipids, essential for building the cell membrane, are manufactured by

- (a) rough endoplasmic reticulum
- (b) golgi apparatus
- (c) plasma membrane
- (d) mitochondria

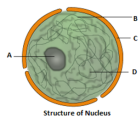
7. The undefined nuclear region of prokaryotes is also known as

- (a) nucleus
- (b) nucleolus
- (c) nucleic acid
- (d) nucleoid

8. Which out of the following is not a function of vacuole?

- (a) Storage
- (b) Providing turgidity and rigidity to the cell
- (c) Waste excretion
- (d) Locomotion

9. The nucleus controls all the activities of the cell and acts as a site of DNA material and protein synthesis. It is composed of some components which all together give the nucleus its functionality. Here is shown a figure of the nucleus with some of its components labeled as A, B, C and D. Can you name these components correctly?

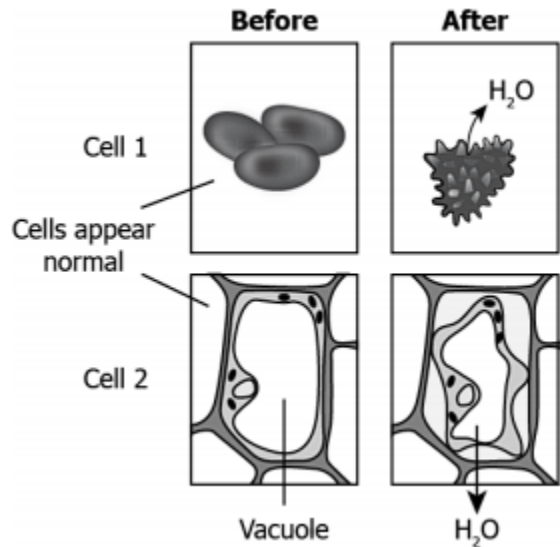


- (a) A – Nucleons; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
- (b) A – Nucleus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
- (c) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
- (d) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nuclear wall

10. Mitochondria are the sites of respiration in the cell. They oxidize carbohydrates and fats present in the cell to produce carbon dioxide, water and a lot of energy. The energy so released is stored in the form of ATP molecules. Since mitochondria in the cell are used to synthesize energy so, they are also called:

- (a) Energy currency of the cell
- (b) Energy generator of the cell
- (c) Kitchen of the cell
- (d) Power house of the cell

Q11. The image shows how the two cells appear before and after placing in a hypertonic solution.



- i) Cell 1: animal cell, cell 2 : plant cell.
- ii) Cell 1: bacterial cell, Cell 2 : plant cell.
- iii) Cell 1: plant cell , Cell 2 : animal cell.
- iv) Cell 1: animal cell, Cell 2: bacterial cell.

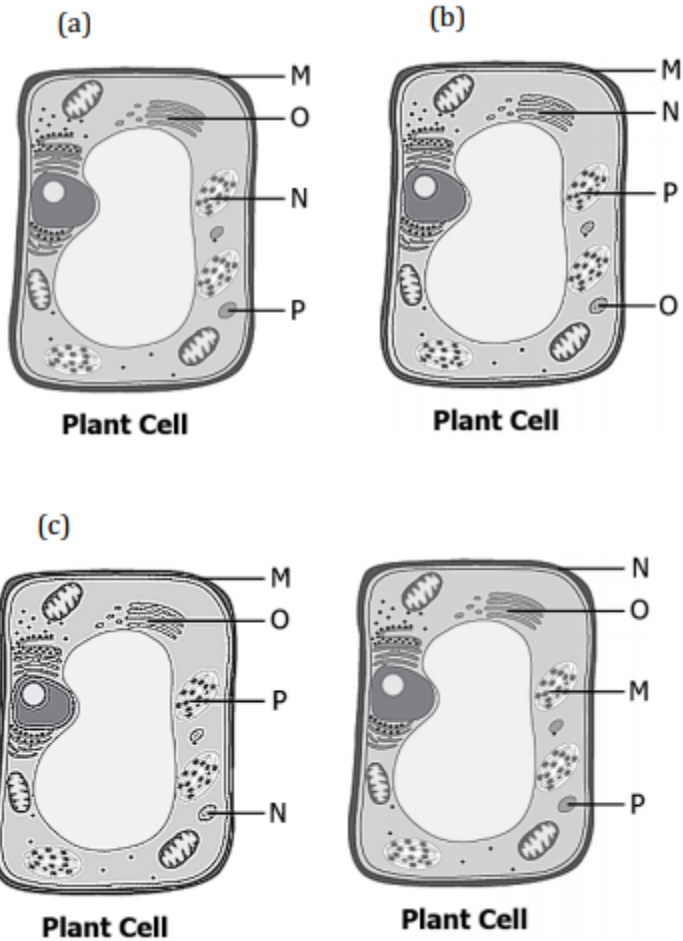
Q 12.What is a basis for differentiation of a prokaryotic cell from a eukaryotic cell?

- (a)presence or absence of cytoplasm
- (b)presence or absence of cell membrane
- (c)presence or absence of genetic material
- (d)presence or absence of membrane bound organelles

Q13. The table lists the functions performed by some organelles

Organelle	Function
M	It allows transportation of materials in and out of the cells.
N	It stores the products of ER in vesicle.
O	It helps digest foreign molecules.
P	It produces food in the cell.

Which option shows the correctly labelled organisms in the plant cells that perform the respective function?



- Q14. The process of plasmolysis in a plant cell is defined as:
- Breakdown of plasma membrane in hypotonic medium.
  - Shrinkage of cytoplasm in hypertonic medium.
  - Shrinkage of nucleoplasm.
  - None of these.

- Q15. The proteins and lipids essential for building the cell membrane are transported by
- rough endoplasmic reticulum
  - Golgi apparatus
  - Plasma membrane
  - Mitochondria

- Q16. Name the two cell regions containing their own genetic material:
- Mitochondria and plastids
  - Lysosomes and ribosomes

- c) Nucleus and mitochondria
- d) Golgi apparatus and endoplasmic reticulum

Q17. The most abundant material in plant cell wall is

- a) Cellulose
- b) Lipids
- c) Proteins
- d) Wax

Q18. Which organelles is called the suicide bag of cell

- a) Golgi apparatus
- b) Centrosome
- c) Lysosome
- d) Chloroplasts

Q19. Four new cells produces by cell division, in that new cells have only half the number of chromosomes than that of mother cell

- a) Endocytosis
- b) Exocytosis
- c) Meiosis
- d) Mitosis

Q20. Which of the following act as a garbage disposal system of a cell?

- a) Golgi body
- b) Vacuole
- c) Lysosome
- d) Mitochondria

Q21. Amoeba acquires its food through a process, termed

- (a) exocytosis
- (b) endocytosis
- (c) plasmolysis
- (d) exocytosis and endocytosis both

Q22. Silver nitrate solution is used to study

- (a) endoplasmic reticulum
- (b) golgi apparatus
- (c) nucleus
- (d) mitochondria

Q23. Lipid molecules in the cell are synthesised by

- (a) smooth endoplasmic reticulum
- (b) rough endoplasmic reticulum
- (c) golgi apparatus
- (d) plastids

Q 24. Cell theory was given by

- (a) Schleiden and Schwann
- (b) Virchow
- (c) Hooke
- (d) Haeckel

Q25. Select the odd one out.

- (a) The movement of water across a semi permeable membrane is affected by the amount of substances dissolved in it.
- (b) Membranes are made of organic molecules like proteins and lipids.
- (c) Molecules soluble in organic solvents can easily pass through the membrane.
- (d) Plasma membranes contain chitin sugar in plants.

Q26. \_\_\_\_\_ is called the energy currency of the cell

- a) Endoplasmic reticulum
- b) Oxygen
- c) ATP
- d) Mitochondria

Q27. Rahul's mother was going to make pickle. For this she cut the vegetables into small pieces and put them in the sun for few hours. Rahul was observing all her activities very curiously and asked his mother if why she had put the salted vegetables in the sun. among the following what might be the most appropriate answer for his question?

- (a) So that the pickle may get extra flavour.
- (b) So that the cut vegetables may absorb the vitamin d as a nutrient from the sun rays.

- (c) So that the vegetables may lose all the water by diffusion and evaporation and become dry.
- (d) So that the salt may get evenly and properly absorbed by the vegetables.

Q28. Anjali wanted to eat rice and kidney bean (rajmah). She requested her mother to cook the same on next day. At night her mother took a cup of kidney beans and put them in a container having some water and she kept the container covered overnight. Next day it was observed that the kidney beans got swollen and were ready to be cooked. What is this phenomenon due to which kidney beans got swollen is known as?

- (i) Osmosis
- (ii) Diffusion
- (iii) Endosmosis
- (iv) Exosmosis

Choose the correct option among the following:

- (a) Only (iii)
- (b) Both (i) and (iii)
- (c) Both (i) and (iv)
- (d) Only (i)

## Section 2

Directions: In the following questions.....( 1 to 4) a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
- (b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
- (c) Assertion (A) is true but reason (R) is false.
- (d) Assertion (A) is false but reason (R) is true.

Q.1. Assertion : A cell swells up when present in a hypotonic solution.

Reason : More water molecules enter the cell than they leave.

Q2.Assertion : The endoplasmic reticulum which lacks ribosomes is called smooth endoplasmic reticulum

Reason : SER is mainly involved in protein synthesis

Q3. Assertion : Plasma membrane is selectively permeable.

Reason : Plasma membrane allows some molecules to pass through it more easily than others.

Q4. Assertion : Leucoplasts perform photosynthesis.

Reason : Chloroplasts store fats, starch and proteins

### Section 3

**Read the following and answer the questions.....**

Q1. Plastids found only in plant cells. The internal organisation of plastids contain numerous membrane layers embedded in a material called stroma. Plastids are similar to mitochondria in external structure structure. They are also double layered and contain their own DNA and ribosomes.

Plastics are of three types:

**\*Chloroplast\*** : These are the plastids containing chlorophyll a green pigment which gives green colour to the plant. It is also a semiautonomous organelles.

**\*Function\*** : these are important for photosynthesis in plants.

**\*Leucoplasts \***: These are the white or colourless plastids. They can change to other types of plastids.

**\*Function\***: leucoplast store materials such as starch, oils and protein granules.

**\*Chromoplasts\***: These are coloured plastids.

**\* Function \***: Chromoplast impart colour to flowers and fruits. They are rich in in carotenoid pigments and lipids.

i) Which of the following species lack plastids?

- a) Fungi and animals
- b) Plant and animal
- c) Bacterium ,animal and fungi
- d) None of these

ii) Chromoplasts are rich in

- a) B - carotene



- b) Anthocyanin
- c) Carotenoid
- d) None of these

iii) Which of the following best describe chromoplasts?

- a) Colourful organelles used to do photosynthesis
- b) Organelles lacking a pigment
- c) Colourful organelles used for attracting pollinators
- d) Organelle is used for protein storage

Q2. The structure of the cell and its component may vary to a certain extent in plants and animals, the basic structure and function of specific organelles remain the same. Cells fall into two categories Prokaryotic and Eukaryotic. The single celled organism of the domain bacteria and archaea are called prokaryotes whereas animal cell, plant cell, plant cell are called Eukaryotic.

i) The nucleus of both Plant and Animal cell contain one or more dense bodies known as nucleoli. Which one of the following correctly describe the function of nucleoli?

- a) The organisation of the spindle during nuclear division replication of Mitochondria following nuclear division
- b) The replication of Mitochondria following nuclear division
- c) The breakdown and the formation of nuclear membrane
- d) The formation of ribosomes

ii) Ribosomes in prokaryotic cells are of size

- a) 1 micrometre
- b) 5 micrometer
- c) 0.1 micrometre
- d) 0.5 micrometre

iii) characteristic of prokaryotic cell is

- a) it has more than one chromosome
- b) membrane bound organelles are present
- c) nuclear region well defined
- d) nuclear region and defined and containing nucleic acid.