THE VILLAGE
INTERNATIONAL SCHOOL
"We Nurture Dreams"

AIM HIGH, TOGETHER WE FLY

GRADE 9 BIOLOGY

CHAPTER 5: THE FUNDAMENTAL UNIT OF LIFE

Question Bank 1

1) Name the cell organelles which is generally small sized in animal cells and large in plant cells.
   Ans. Vacuoles.
2) List any two single celled (unicellular) organisms.
   Ans. Amoeba and Euglena
3) Mention the difference between Prokaryotes and Eukaryotes in terms of nuclear region present in them.
   Ans. Prokaryotic cells do not have a well defined nuclear region known as nucleoid whereas Eukaryotic cells have a well defined nucleus.
4) Name the plastid which gives red colour to tomato and purple colour to brinjal.
   Ans. Chromoplast.
5) What is the primary function of leucoplasts?
   Ans. They store starch, oils, protein granules.
6) Who discovered cell?
   Ans. Rober Hooke.
7) Expand ATP. Where it is produced?
   Ans. Adenosine Triphosphate. It is produced in mitochondria.
8) Name the process through which an amoeba acquires its food from the external environment.
   Ans. The process through which an amoeba acquires its food from the external environment is endocytosis. (
9) State the significance of membrane biogenesis.
   Ans. The smooth endoplasmic reticulum helps in the manufacture of fats or lipids important for cell function and building cell membrane.
10) Identify the cell organelle which is known as the power house of the cell. State reason.
    Ans. Mitochondria; as energy is released from it.
11) Name the cell organelle that is commonly termed as suicidal bags of the cell.
    Ans. Lysosomes.
12) State the function of chromosome in a cell.
    Ans. Chromosome is the carrier of genetic information.
13) Name the cell organelle which you would associate with elimination of old and worn out cells.
    Ans. Lysosomes.
14) Name two cell organelles that contain their own genetic material.
    Ans. Mitochondria and chloroplast.
15) Identify and name the following cell structures :
    a. The undefined nuclear region of prokaryotic cell.
    b. Site of energy release inside the cell.

    Ans. (a) Nucleoid (b) Mitochondria.
16) When a living plant cell loses water through osmosis, there is contraction of the contents of the cell away from the cell wall. What is this phenomenon called?
    Ans. Plasmolysis.
17) Mention the change in human red blood cells when they are placed in hypotonic salt / sugar solution.
    Ans. They will respectively shrink or burst.

18) Name the main constituent substance present in plant cell wall and state its function.
Ans. Cellulose. It provides structural strength to plant.
19) Name the kind of plastid which is important for photosynthesis in leaves of the plants.
Ans. Chloroplast.
20) Name the cell organelle that detoxifies poisons and drugs into liver of vertebrates.
Ans. Smooth Endoplasmic Reticulum.
21) Name two cell organelles having double membrane envelope.
Ans. Chloroplast and mitochondria
22) Name any two materials stored in leucoplasts.
Ans. Starch/oils/protein granule. (any two)
23) A de-shelled egg is placed in a concentrated salt solution and observed after five minutes. What change takes place?
Ans. The egg shrinks.
24) Name the cell organelle which is associated with protein synthesis.
Ans. Ribosomes.
25) Name two components of chromosomes.
Ans. Proteins and DNA.
26) List the constituents of plasma membrane.
Ans. Lipids and Proteins.
27) Name the organelle which has membrane bound sac filled with powerful digestive enzymes.
Ans. Lysosomes.
28) Identify the single celled organisms from the following :
Cockroach, Chlamydomonas, snake, mosquito, bacteria.
Ans. Chlamydomonas and bacteria.
29) Name : (i) the cells which have changing shape, (ii) the cells which have a typical shape.
Ans. (i) Amoeba, (ii) Nerve cell.
30) Name the plastid involved in conversion of a green brinjal to violet.
Ans. Chromoplast.
31) Name the process through which an Amoeba acquires its food from the external environment.
Ans. Endocytosis.
32) Name the cell organelle responsible for intracellular transport.
Ans. Endoplasmic Reticulum.
33) Name the functional unit of DNA that carries genetic information.
Ans. Genes.
34) What will happen if chloroplast is taken out of the cell and illuminated?
Ans. Chloroplast is a semiautonomous cell organelle which on illumination can perform its function of photosynthesis and release oxygen even outside the cell provided it is kept in isotonic medium and receive raw material of carbon dioxide
35) Is there any animal cell that lacks lysosomes?
Ans. Mammalian RBCs (Red Blood Corpuscles) lack lysosomes.
36) Plant cells have large vacuoles each surrounded by a membrane. What is the name of this membrane?
Ans. The membrane that surrounds the vacuole is called tonoplast. The vacuole contains cell sap in it.
37) Cell size may range from a few micro metre to a metre. Support this statement with the help of examples.
Ans. Many cells are visible only under a microscope e.g., Mycoplasma is the smallest cell and longest cell in human body is nerve cell or neuron.
38) Why is it said that ‘‘a cell without nucleus is without any future’’?
Ans. Nucleus is called the control centre of the cell as it controls all the metabolic activities going in the cell directly or indirectly and also in formation of various cell organelles by controlling the synthesis of proteins
39) What is endoplasmic reticulum? Name the two types of endoplasmic reticulum. Write its main functions.

Ans. Endoplasmic reticulum is a membranous network enclosing a fluid-filled lumen. The two types of endoplamic reticulum are Rough Endoplasmic Reticulum (RER) and Smooth Endoplasmic Reticulum. (SER). RER has ribosomes attached to its surface. The ribosomes take part in protein synthesis.SER does not have any ribosomes on it and secretes lipids. Some proteins and lipids synthesised in ER are used for producing new cellular parts, specially the cell membrane, by biogenesis.

40) Name a cell organelle which lacks membrane. Where is it prepared?
Ans. Ribosomes is a cell organelle that lacks membrane. It is prepared in the nucleolus.

41) What is plasmolysis? What happens to a plasmolysed cell when it is placed in water?
Ans. Shrinkage of protoplast from the cell wall in presence of hypertonic solution due to exosmosis is know as plasmolysis. When a plasmolysed cell is placed in water, the concentration of water in the outside medium is more than the concentration in the cell. Hence, water moves inside the cell leading to its swelling.

42) What is plasma membrane? What are its functions?
Ans. Plasma membrane also called as cell membrane, is the outer covering of a cell that separates its contents from the surrounding medium. It is made up of lipids and proteins, and provides a mechanical barrier to protect the inner contents of the cell. It encloses the nucleus and cytoplasm of the cell.

43) What are cell organelles?
Ans. The different parts found inside the cell are called cell organelles. They perform specific functions and together carry out the various metabolic activities of the cell.

44) What is cellulose and its function?
Ans. Cellulose is the main component of a plant cell. It is a polysaccharide and is responsible for providing structural strength to the plants.

45) How are vacuoles in plant cells different from those in animal cells?
Ans.

S. No.	Vacuoles in plant cells	Vacuoles in animal cell
1	They are comparatively very large in size.	They are comparatively smaller in size.
2	They are few in number.	They are comparatively more in number.
3	They contain cell sap and provide turgidity and rigidity to the cell.	They may contain food and are called food vacuoles. In some cases they become specialised to expel out excess of water and wastes, like in amoeba.

46) What do you mean by a nucleoid?
Ans. In prokaryotes and lower organisms like bacteria, the nuclear region of the cell may be poorly defined because of the absence of a nuclear membrane. Such an undefined and incipient nucleic region containing only naked nucleic acids without any membrane covering them is called a nucleoid.

47) What are vacuoles? What are their functions?
Ans. Vacuoles are clear fluid filled or gas filled spaces in the cytoplasm. A vacuole is covered by a covering called tonoplast. In plant cells, the vacuoles are larger and less in number as compared to the animal cells. Vacuoles help in the storage of water, food and other waste substances.

48) What is a centrosome and what function does it perform?
Ans. A centrosome contains micro cylindrical bodies called centrioles. It is located near the nucleus and is present in animal cell only. It initiates and regulates cell division. It is involved in spindle formation during the cell division. 1 + 1

49) Write the function of chromatin material.

Ans. The chromatin material mainly consists of deoxyribonucleic acid (DNA) which stores and transmit the hereditary information from one generation to another.

50) Describe in short the chief components of a nucleus.

Ans. (i) Nucleoplasm, a liquid ground substance.

(ii) Chromatin material, which is a network of DNA protein fibres which carry genes, that carry the genetic information from one generation to the next.

(iii) Nucleolus, which lies in the centre and helps in the formation & storage of RNAs as well as in the formation of ribosomes.

51) Why are mitochondria also referred to as 'strange organelles'?

Ans. Mitochondria have their own DNA and ribosomes, due to which they are able to make some of their own proteins and are semi-autonomous.

52) What role does a nucleus play in cellular reproduction?

Ans. The nucleus plays the central role in Cellular reproduction. Cellular reproduction is the process by which a single cell divides and forms two new cells. Apart from that, the nucleus also plays a vital role in determining the way the cell will develop and what form it will at maturity, (by directing the chemical activities of the cell) attain.

53) Distinguish between cell wall and cell membrane.

Ans.

S.No.	Cell wall	Cell membrane
1	It is present only in plant cell.	It occurs both in animal cells and plant cells.
2	. It is dead in nature and permeable.	It is a living membrane and is semi-permeable.
3	. It is composed of cellulose.	It is composed of lipids and proteins.

54) Give differences between cytoplasm and nucleoplasm.

Ans.

S.No.	Cytoplasm	Nucleoplasm
1	. Cytoplasm is the protoplasm which lies outside the nucleus. i.e., between the nucleus and the cell membrane.	It is the part of protoplasm that lies inside the nucleus.
2	It is a semi-fluid jelly-like substance.	It is transparent.
3	It contains various organelles and inclusions.	It is a colloidal substance having similar composition to cytoplasm, but contains more of nucleotides.
4	. It contains a number of inorganic substances forming clear true solution as well as organic substances lipids, protein and carbohydrates.	It contains chromatin material.

55) Write the main functions of cell wall.

Ans. (i) Cell wall provides shape as well as rigidity to the cell.

(ii) It protects the protoplasm.

(iii)It is involved in the movement of materials in and out of the cell.

(iv) Growth of cell wall determines the growth of cell.

56) Give any two functions of plastids.

Ans. (i) Chloroplast is the site of photosynthesis and helps in preparing the food (in case of plants).
(ii) Leucoplasts are the site of storage of food.
(iii) Chromoplast provide colour to various flowers and fruits. (any two)

57) What will happen if –
   a. Excess amount of fertilisers are added to green grass lawn.
   b. Salt is added to cut pieces of raw mango?

Ans. (a) It will kill grass plants due to exosmosis and plasmolysis.
(b) Salt protects the cut pieces from bacterial and fungal attack.

58) Differentiate between chromatin and chromosome.
Ans. Chromatin is the nucleoprotein fibrous mass which stains strongly with basic dyes and is present inside the nucleus. Chromosomes are the thread-like, stainable, condensed chromatin unit, visible at cell division and contains hereditary information in the form of genes.

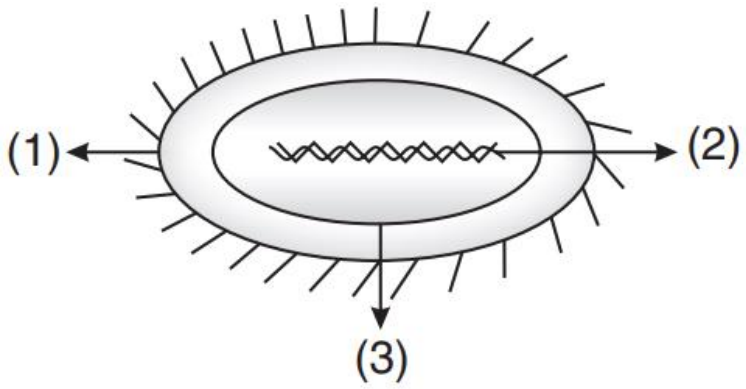
59) Why is endocytosis found in animals only?
Ans. Endocytosis is engulfment of food and other substances from external medium by plasma membrane. This is possible only when plasma membrane is in direct contact with external medium. It occurs only in animal cells. In plant cells, a cell wall is present over the plasma membrane. Therefore, their plasma membranes cannot perform endocytosis.

60) Write two points of difference between nuclear region of a bacterial cell and nuclear region of an animal cell.
Which structure present in the nuclear region of a living cell bear genes?
Ans.
a)

Nuclear region of bacterial cell	**Nuclear region of an animal cell**
Poorly defined and lacks any covering.	Well defined and membrane bound.
Has single chromosome.	Has more than one Chromosome
Lacks true organelles.	Well defined membrane bound cell organelles present.

b) Chromosomes bear ‘genes’

61) A) Label the parts marked 1, 2, 3 in a prokaryotic cell. B) Mention any three features of prokaryotic cells



Ans. (a) 1 – Cell wall, plasma membrane, 2 – Nucleoid, 3 – Cell wall
(b) (i) Lack nuclear membrane.
(ii) Lack cytoplasmic organelles.