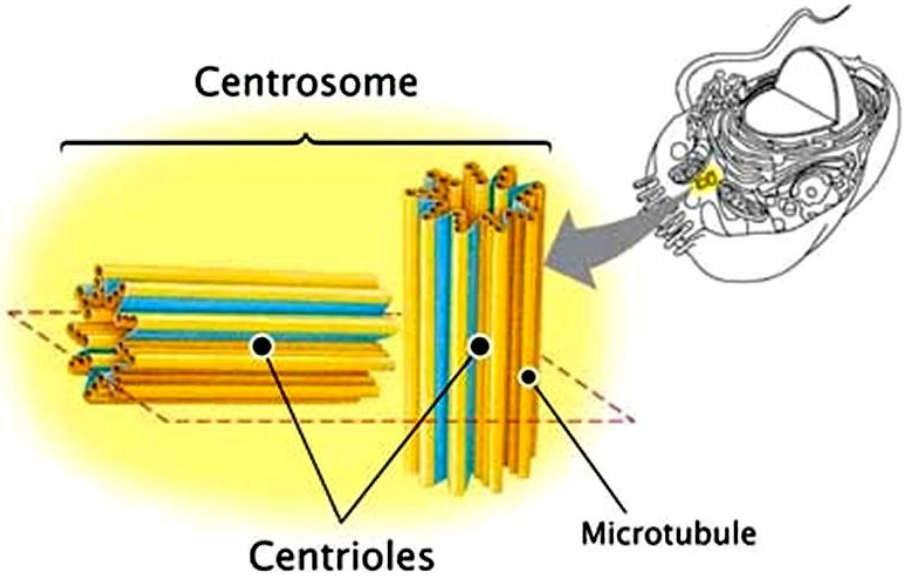
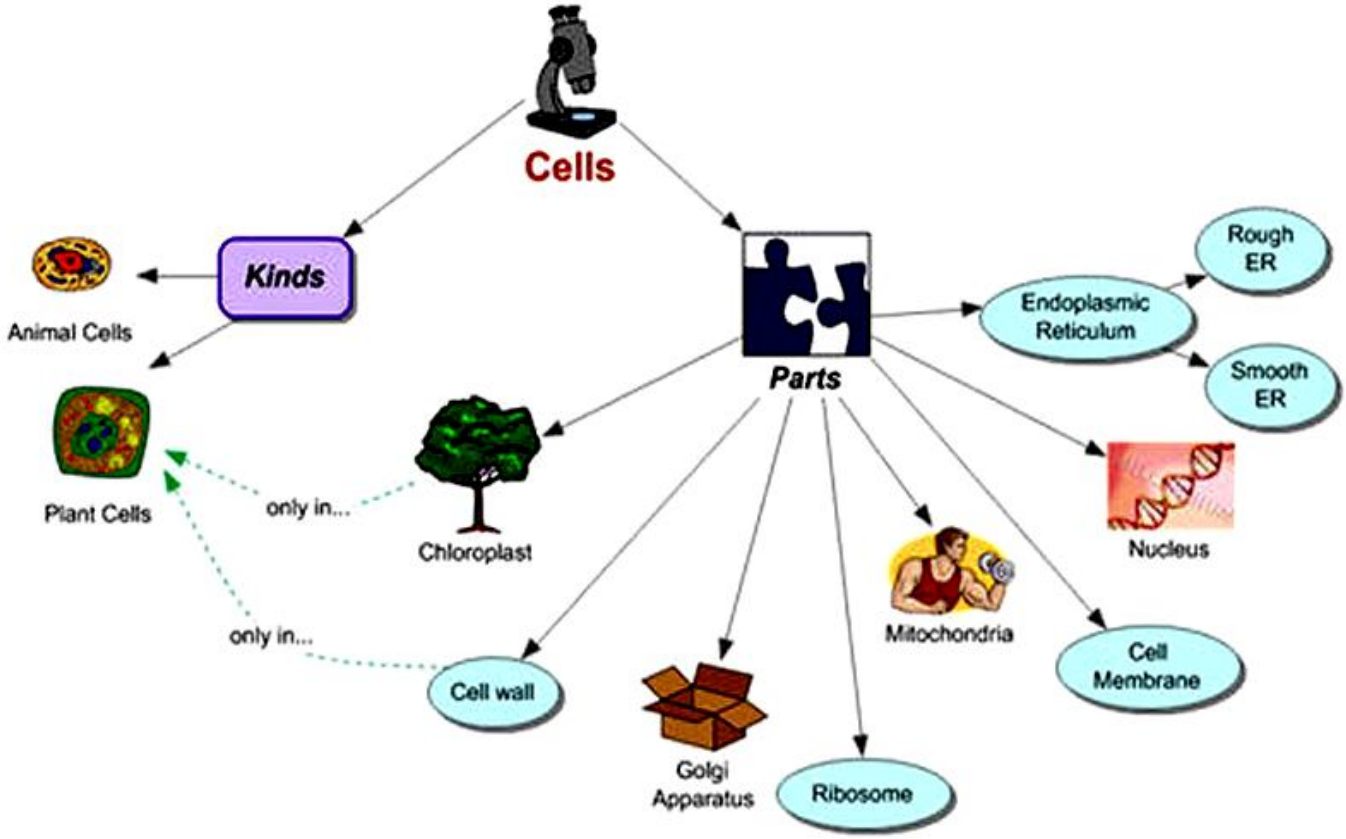
Functions of Centrioles

Centrioles play an important role in the formation of spindle fibres during cell division.



SUMMARY

STRUCTURE OF CELL

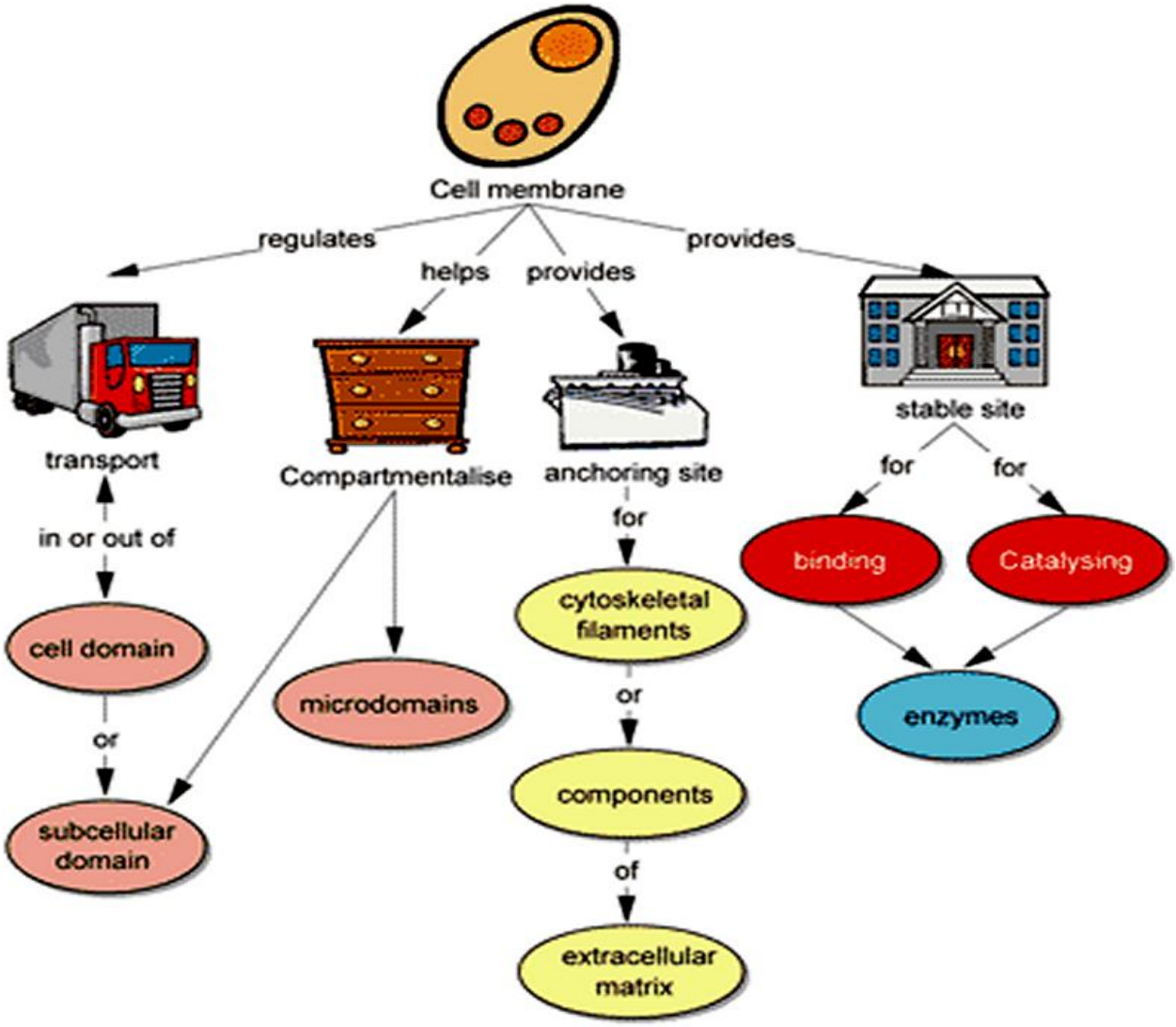


HISTORY OF DISCOVERY OF CELLS

- Robert Hooke was the first to discover cell (1665).
- Leeuwenhoek was the first to discover free living cells in pond water (1674).
- Robert Brown discovered the nucleus (1831).

- Purkinje coined the term ‘protoplasm (1839).
- Schleiden (1838) and Schwann (1839) proposed the Cell Theory. Virchow (1855) made further addition to the cell theory.
- The discovery of electron microscope (1940) made it possible to study the structures of cell organelles.

FUNCTION OF CELL MEMBRANE



CELL CONCEPT MAP

What do you know about the cells?

CELL

Procaryote and eucaryote- 2 types

Basic unit of life. All organisms consists of cell

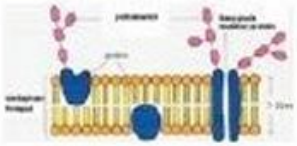
Consists of

Cellwall *(plant cell)*

Made up from cellulose, porous to micro- and macromolecules like sugar and starch

Cell membrane

The fluid mosaic hypothesis- the bilayer of phospholipid molecules with protein molecules in it / over the surface



Protoplasm

of two parts

Cytoplasm

contains

Microbodies contained in the cytoplasm, carrying out specific functions for the cell activities

Cell organelles

Mitocondrion

Generates energy for the cell

Ribosome

The site for protein synthesis

Chloroplast (in *green plant*)

Grana → **Contains chlorophyll**

Stroma → **Contains enzymes**

Endoplasmic reticulum

Rough ER → With ribosomes

Smooth ER → No ribosomes

Golgi Body

Processing and packaging proteins/ other molecules to form cell secretions

Nucleus

Consists of

Nucleoplasma

contains

Fluid medium, (containing nucleotides and enzymes)

Nuclear membrane

Vacuole *(plant cell)*

Contains water, nutrients, mineral salts, waste (nitrogenous) substances

Chromatin substances / chromosomes

Consists of

Protein (histone)

DNA

INTEXT QUESTIONS PAGE NO. 63

Q1. Can you name the two organelles we have studied that contain their own genetic material?
Answer: Mitochondria and plastids are the two organelles that contain their own genetic material. Both these organelles have their own DNA and ribosomes.

Q2. If the organisation of a cell is destroyed due to some physical or chemical influence, what will happen?
Answer: Cell is the smallest unit of life, which is capable of all living functions. If the organisation of a cell is destroyed due to some physical or chemical influence, then the ability of the cell to perform all living functions such as respiration, nutrition, excretion, etc. would be affected.

Q3. Why are lysosomes known as suicide bags?
Answer: Lysosomes are membrane-bound vesicular structures that contain powerful digestive enzymes. These enzymes are capable of breaking down any foreign food particle or microbes entering the cell. Sometimes, lysosomes can cause self-destruction of a cell by releasing these digestive enzymes within the cells. Hence, they are also known as 'suicidal bags'.

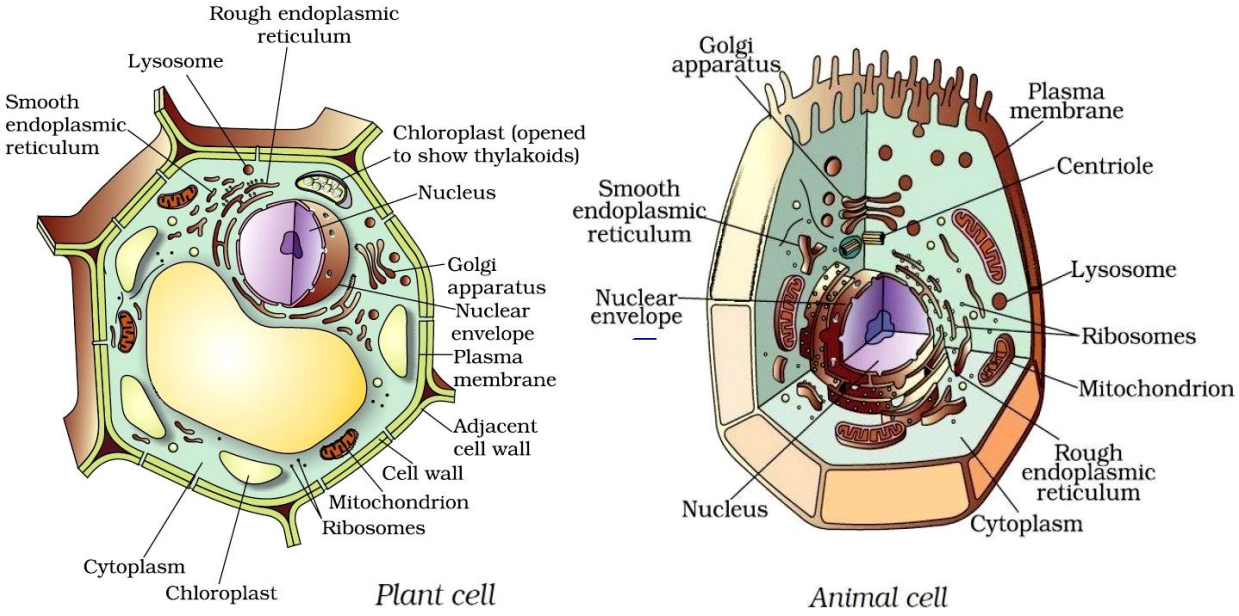
Q4. Where are proteins synthesized inside the cell?
Answer: Ribosomes are the site for protein synthesis. Ribosomes are very small structures found either in a free state, suspended in the cytoplasm, or attached to the surface of the endoplasmic reticulum. They are composed of ribonucleic acids and proteins.

EXERCISE QUESTIONS PAGE NO. 66 and 67

Q1. Make a comparison and write down ways in which plant cells are different from animal cells.
Answer:

Differences between Plant cell and Animal cell

S.No.	Plant cell	Animal cell
1.	Plant cell has an outer rigid cell wall which is made up of cellulose.	Animal cell lacks a cell wall.
2.	Plant cell is larger than animal cell.	Animal cell is comparatively smaller in size.
3.	Plant cell has large vacuoles which occupy more space in the cell.	Animal cell usually lacks vacuoles. Even if they are present, they occur in minute sizes.
4.	Centrosome is present only in the cells of some lower plants.	All the animal cells have centrosomes.
5.	Lysosomes are found only in the eukaryotic plant cells.	Lysosomes are found in all animal cells.
6.	Plant cell contains plastids.	Plastids are absent
7.	Mostly, starch is the storage material.	Glycogen is the storage material.



Q2. How is a prokaryotic cell different from a eukaryotic cell?
Answer:
Differences between Prokaryotic cell and Eukaryotic cell

Prokaryotic Cell		Eukaryotic Cell	
1.	It is generally smaller (1-10 micro metre) in size	1.	It is comparatively larger (5-100 micro metre) in size.
2.	It lacks a well organised nucleus as its nuclear material is not surrounded by a nuclear membrane.	2.	It contains a well organized nucleus as its nuclear material is surrounded by a nuclear membrane.
3.	It has a single chromosome	3.	It has more than one chromosome.
4.	Nucleolus is absent	4	Nucleolus is present
5.	It lacks membrane bound cell organelles.	5.	It possess membrane bound cell organelles.
6.	Cell division occurs by fission or budding. Mitotic and meiotic divisions are absent	6.	Cell division takes place by mitosis and meiosis.
7.	Ribosomes are smaller	7.	Ribosomes are larger

Q3. What would happen if the plasma membrane ruptures or breaks down?
Answer: If the plasma membrane of a cell is ruptured, then the cell will die. The plasma membrane regulates the movement of substances in and out of the cell by diffusion or osmosis. Thus, if the plasma membrane is ruptured, then the cell might leak out its contents.

Q4. What would happen to the life of a cell if there was no Golgi apparatus?
Answer: If there was no Golgi apparatus in the cell, then most activities performed by the Golgi apparatus will not take place.

(i) Membranes of the Golgi apparatus are often connected to ER membranes. It collects simpler molecules and combines them to make more complex molecules. These are then packaged in small vesicles and are either stored in the cell or sent out as per the requirement.

Thus, if the Golgi apparatus is absent in the cell, then the above process of storage, modification, and packaging of products will not be possible.

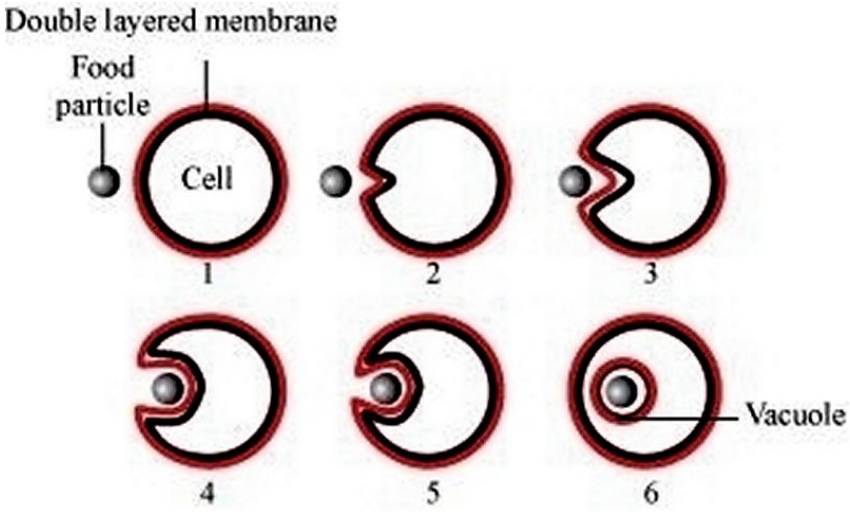
(ii) The formation of complex sugars from simple sugars will not be possible as this takes place with the help of enzymes present in Golgi bodies.

(iii) The Golgi apparatus is involved in the formation of lysosomes or peroxisomes. Thus, if the Golgi body is absent in a cell, the synthesis of lysosomes or peroxisomes will not be possible in the cell.

Q5. Which organelle is known as the powerhouse of the cell? Why?
Answer: Mitochondria are known as the powerhouse of cells. Mitochondria create energy for the cell, and this process of creating energy for the cell is known as cellular respiration. Most chemical reactions involved in cellular respiration occur in the mitochondria. The energy required for various chemical activities needed for life is released by the mitochondria in the form of ATP (Adenosine triphosphate) molecules. For this reason, mitochondria are known as the powerhouse of cells.

Q6. Where do the lipids and proteins constituting the cell membrane get synthesised?
Answer: Lipids and proteinsconstituting the cell membrane are synthesized in the endoplasmic reticulum.
SER (Smooth endoplasmic reticulum) helps in the manufacturing of lipids.
RER (Rough endoplasmic reticulum) has particles attached to its surface, called ribosomes. These ribosomes are the site for protein synthesis.

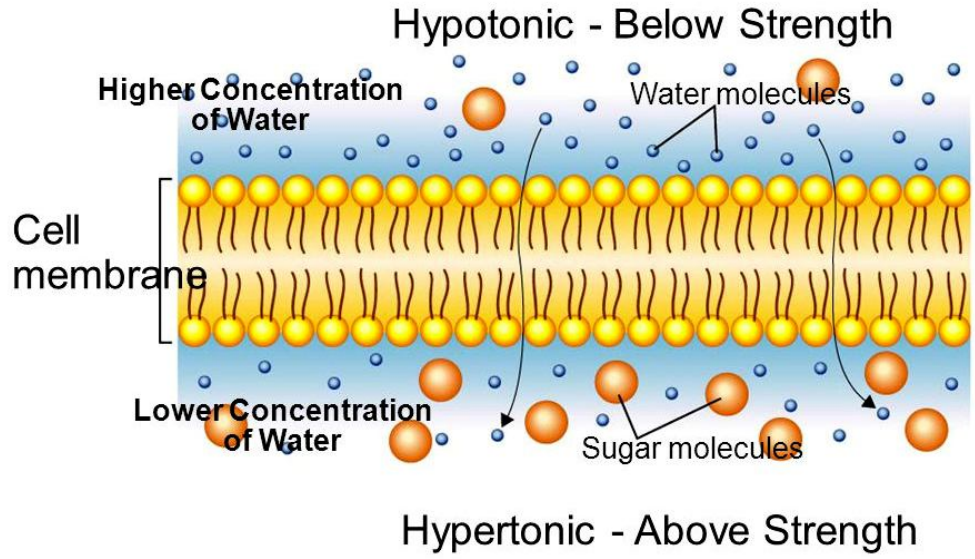
Q7. How does an *Amoeba* obtain its food?
Answer: Amoeba obtains its food through the process of endocytosis. The flexibility of the cell membrane enables the cell to engulf the solid particles of food and other materials from its external environment.



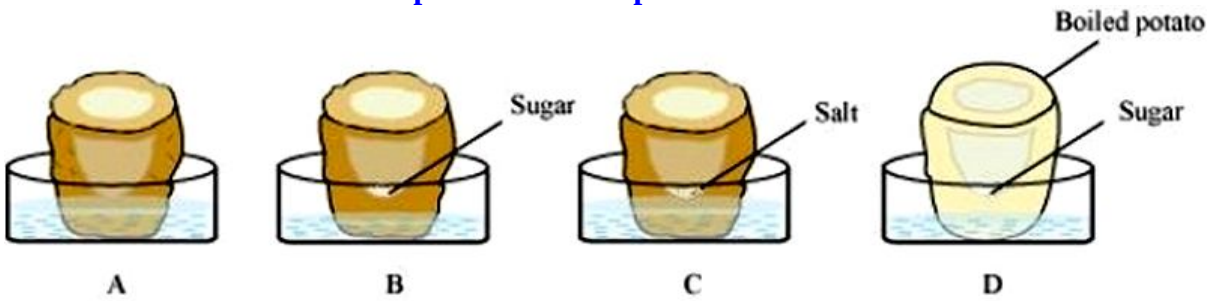
Cell engulfing food particle

Q8. What is osmosis?
Answer: The movement of water molecules from a region of high concentration to a region of low concentration through a selectively permeable membrane is called osmosis. It is a special case of diffusion, where the medium is water.

For example, if the medium surrounding the cell has a higher water concentration than the cell i.e., if the solution is a dilute solution, then the cell will gain water by osmosis.



Q9. Carry out the following osmosis experiment: Take four peeled potato halves and scoos each one out to make potato cups. One of these potato cups should be made from a boiled potato. Put each potato cup in a trough containing water. Now,
(a) Keep cup A empty
(b) Put one teaspoon sugar in cup B
(c) Put one teaspoon salt in cup C
(d) Put one teaspoon sugar in the boiled potato cup D.
Keep these for two hours. Then observe the four potato cups and answer the following:
(i) Explain why water gathers in the hollowed portion of B and C.
(ii) Why is potato A necessary for this experiment?
(iii) Explain why water does not gather in the hollowed out portions of A and D.
Answer: **Experimental set up**



(i) Water gathers in the hollowed portions of set-up B and C because water enters the potato as a result of osmosis. Since the medium surrounding the cell has a higher water concentration than the cell, the water moves inside by osmosis. Hence, water gathers in the hollowed portions of the potato cup.
(ii) Potato A in the experiment acts as a control set-up. No water gathers in the hollowed portions of potato A.
(iii) Water does not gather in the hollowed portions of potato A because potato cup A is empty. It is a control set-up in the experiment.

Water is not able to enter potato D because the potato used here is boiled. Boiling denatures the proteins present in the cell membrane and thus, disrupts the cell membrane. For osmosis, a semi-permeable membrane is required, which is disrupted in this case. Therefore, osmosis will not occur. Hence, water does not enter the boiled potato cup.

ASSIGNMENT QUESTIONS SET – 1
CHAPTER – 5
THE FUNDAMENTAL UNIT OF LIFE

1. Define Cell

2. What will happen to a cell if its nucleus is removed?

3. Who proposed the Cell theory ?

4. What is Nucleoid ?

5. Fill in the blanks:-

(a) New cells are formed from _____.

(b) Movement of water molecules from their higher concentration to their lower concentration through a semi- permeable membrane is called _____.

(c) The functional components of cell are _____, _____& _____.

(d) Protoplasm has two parts- _____ & _____.

(e) Nucleus, mitochondria & plastids have their own _____ & _____.

(f) The shrinkage or contraction of the contents of the cell away from the cell wall is known as _____.

(g) The process by which Amoeba can engulf a food particle is _____.

(h) _____ is the manufacture of lipids required for making cell membrane.

(i) A cell that lacks nuclear membrane is called a prokaryotic cell & the nuclear region is called _____.

(j) Movement of materials in & out of the cell takes place by _____ & _____.

6. Identifiy and name the following cell structures:

a) The undefined nuclear region of Prokaryotic cell.

b) Site of energy release inside the cell.

7. Name the kind of plastid which is important for photosynthesis in leaves of the plants.

8. Name the two components of chromosomes.

9. When does the chromatin network separate out to form chromosomes?

10. Name the cell organelle that detoxifies poisons and drugs.

11. Name the cell organelle that is associated with protein synthesis.

12. Name a cell which changes its shape.

13. Name the functional unit of DNA that carries genetic informations.

14. Expand the word DNA.

15. State the primary functions of plasma membrane.

16. Name a cell that lacks cell wall

17. Name the main constituent substance present in plant cell wall.

18. Name the cell which is responsible for intracellular transport.

19. Name the Reticulum which has ribosome's attached to it .

20. Name a cell that does not have a nucleus, what are they called?

21. The largest cell in the human body is -

(a) Nerve cell (b) Muscle cell

(c) Liver cell (d) Kidney cell

22. The barrier between the protoplasm and the other environment in an animal cells -

(a) Cell wall (b) Nuclear membrane

(c) Tonoplast (d) Plasma membrane

23. The term 'Cell' was given by -

(a) Leeuwenhoek (b) Robert hooke

(c) Flemming (d) Robert Brown

24. Who proposed the cell theory? -

(a) Schleiden and Schwann (b) Watson and Crick

(c) Darwin and Wallace (d) Mendel and Morgan

25. A plant cell differs from an animal cell in the absence of -

(a) Endoplasmic Reticulum (b) Mitochondria

(c) Ribosome (d) Centrioles

26. Centrosome is found in -

(a) Cytoplasm (b) Nucleus

(c) Chromosomes (d) Nucleolus

27. The power house of a cell is -

(a) Chloroplast (b) Mitochondrion

(c) Golgi apparatus (d) Nucleolus

28. Within a cell the site of respiration (oxidation) is the -

(a) Ribosome (b) Golgi apparatus

(c) Mitochondrion (d) Endoplasmic Reticulum

29. Which is called 'Suicidal Bag'?

(a) Centrosome (b) Lysosome

(c) Mesosome (d) Chromosome

30. Ribosomes are the center for -

(a) Respiration (b) Photosynthesis

(c) Protein synthesis (d) Fat synthesis

31. Double membrane is absent in -

(a) Mitochondrion (b) Chloroplast

(c) Nucleus (d) Lysosome

32. Cell organelle found only in Plant is -

(a) Golgi apparatus (b) Mitochondria

(c) Plastids (d) Ribosomes

33. Organisms lacking nucleus and membrane bound organelle are -

(a) Diploids (b) Prokaryotes

(c) Haploids (d) Eukaryotes

34. Animal cell is limited by -

(a) Plasma membrane (b) Shell membrane

(c) Cell wall (d) Basement membrane

35. The network of Endoplasmic Reticulum is present in the -

(a) Nucleus (b) Nucleolus

(c) Cytoplasm (d) Chromosomes

36. Lysosome are reservoirs of -

(a) Fat (b) RNA

(c) Secretary Glycoprotein (d) Hydrolytic Enzymes

37. The membrane surrounding the vacuole of a plant cell is called -

(a) Tonoplast (b) Plasma membrane

(c) Nuclear membrane (d) Cell wall

38. Cell secretion is done by -

(a) Plastids (b) ER

(c) Golgi apparatus (d) Nucleolus

39. Centrioles are associated with -

(a) DNA synthesis (b) Reproduction

(c) Spindle formation (d) Respiration

40. Main difference between animal cell and plant cell is -

(a) Chromosome (b) Ribosome

(c) Lysosome (d) Endoplasmic Reticulum

41. Animal cell lacking nuclei would also lack in -

(a) Chromosome (b) Ribosome

(c) Lysosome (d) Endoplasmic Reticulum

42. Plasmolysis occurs due to -

(a) Absorption (b) Endosmosis

(c)Osmosis (d)Exosmosis

43. A plant cell becomes turgid due to -

(a) Plasmolysis (b) Exosmosis

(c) Endosmosis (d) Electrolysis

44. Solute concentration is higher in the external solution -

(a) Hypotonic (b) Isotonic

(c) Hypertonic (d) None of the above

45. A cell placed in hypertonic solution will -

(a) Shrink (b) Show Plasmolysis

(c) Swell up (d) No change in shape or size

46. The radiant energy of sunlight is converted to chemical energy and is stored as -

(a) AMP (b) ADP

(c)ATP (d) APP

47. Which of the following organelle does not have membrane?

(a) Ribosome (b) Nucleus

(c) Chloroplast (d) Mitochondria

48. Root hair absorbs water from soil through -

(a) Osmosis (b) Active transport

(c) Diffusion (d) Endocytosis

49. The number of lenses in compound light microscope is -

(a) 2 (b)3 (c) 4 (d)1

50. The history of the cell began in 1665 with the publication of Micrographia in London by -

(a) Robert Hooke (b) Robert Brown

(c) Strasburger (d)Dujardin

51. Cell inclusions are -

(a) Non-living materials present in the cytoplasm

(b) Another name of cell organelle

(c) Cytoskeletal framework of cell

(d) Combined name for cell wall and plasma membrane

52. Which cell organelle is not bounded by a membrane -

(a) Ribosome (b) Lysosome

(c)ER (d)Nucleus

53. Which of the following cellular part possess a double membrane?

(a) Nucleus (b) Chloroplast

(c)Mitochondrion (d)All of the above

54. Cristae and Oxysomes are associated with -

(a) Mitochondria (b) Plastids

(c) Golgi apparatus (d)Plasma membrane

55. Karyotheca is another name of -

(a) Nuclear envelope (b) Nucleus

(c)Nuclear pores (d)Nucleolus

56. Cell organelle that acts as supporting skeletal framework of the cell is -

(a) Golgi apparatus (b) Nucleus

(c) Mitochondria (d) ER

57. Plastids are present in -

(a) Animal cell only

(b) Plant cells only

(c) Both animal cells and Plant cells

(d) Neither animal nor plant cell

58. Cell wall of plant is chiefly composed of -

(a) Hemicellulose (b) Cellulose

(c) Phospholipids (d)Proteins

59. Intercellular connections of plant cells are called -

(a) Middle lamella (b) Micro fibrils

(c) Matrix (d) Plasmodesmata

60. Genes are located on the -

(a) Chromosomes (b) Nucleolus

(c) Nuclear membrane (d)Plasma membrane

61. Chromatin consists of -

(a) RNA (b) DNA

(c) RNA and histones (proteins) (d)DNA and histones (proteins)

62. Different types of chromosomes can be recognized by the positions of the following separating the two arms -

(a) Centromere (b) Genes

(c) Spindle (d)Nucleus

63. Name of the process that requires energy provided by ATP -

(a)Diffusion (b) Osmosis

(c) Active transport (d)Plasmolysis

64. What is the advantage of multicellularity over unicellularity?

65. What are the chromosomes made up of?

66. A cell placed in a solution swells up. What kind of solution is it? Why does it happen?

67. Why are lysosomes known as “suicidal bags”?

68. Why is the nucleus so significant in a cell?

69. Differentiate between plant and animal cells.

70. Give the major functions of the following cell organelles-

71. Why is the cell known the 'fundamental and structural unit of life '

72. What is a semi permeable membrane? what are the differences between semi permeable membrane and selectively permeable membrane?

73. Which cell in the human body does not have the mitochondria?

74. What are plastids? Write their functions?

75. Which structure of animal cells forms the asters of spindle ?

76. Name two semi- autonomous organelles?

77. Which cell organelle is rich in acid hydrolases?

78. Which cell organelles are called ribonucleoprotine particle?

79. Differentiate between SER and RER

80. What is the difference between eukaryotes and prokaryotes?

81. What is the difference between osmosis and diffusion.

82. Where are peroxisomes found ?

83. What are the chemical reactions take place in cytoplasm, nucleoplasm, and in mitochondria?

84. What is Diffusion?

85. What is dictyosomes ?

86. What would happen if an animal cell is kept in distilled water for 24 hours.

87. Give 5 examples of single celled organisms.

88. What are multicellular organisms ? Give an example.

89. Which cell organelle is commonly referred as the suicidal bags of the cell.

90. Name the process through which an amoeba acquires its food from the external surroundings.

91. State the functions of chromosome in a cell.

92. What is Biogenisis?

93. Who discovered Golgi Apparatus?

94. Name the cell organelle which is involved in the formation of lysosomes.

95. What is Endosmosis?

ASSIGNMENT QUESTIONS SET – 2
CHAPTER – 5
THE FUNDAMENTAL UNIT OF LIFE

1. Who expanded cell theory by suggesting that all cells arise from pre-existing cells?

2. In which year electron microscope was invented?

3. Name the book in which Robert Hooke published his observations about cork cells.

4. Who discovered nucleus in the cell?

5. Name the two postulates of the cell theory.

6. Who coined the term 'protoplasm'?

7. Name the largest cell?

8. Name the world's smallest cell.

9. Name the smallest cell in human body.

10. Name the biggest cell in human body.

11. Name the longest cell in human body.

12. Name the cell in human body which cannot reproduce.

13. Give an example of anucleate cell i.e. cell without nucleus.

14. Give an example of cells containing two nuclei (Binucleate).

15. Give examples of cells which are muti-nucleate (i.e. having many nuclei).

16. What is the plasma membrane composed of?

17. Who proposed fluid-mosaic model of cell or plasma membrane?

18. Is plasma membrane permeable or selectively permeable?

19. What are different types transport of components across cell membrane?

20. Define Passive Transport.

21. What is diffusion?

22. Define Osmosis. What are different types of osmosis? Give examples of osmosis.

23. What is plasmolysis?

24. What would happen if the plasma membrane ruptures or breaks down?

25. What do you mean by Endocytosis? How does an Amoeba obtain its food?

26. Define Exocytosis.

27. Why are lysosomes known as suicide bags?

28. What happens to a cell (plant cell or animal cell) when placed in the following solutions:

(a) Hypotonic solution

(b) Isotonic solution

(c) Hypertonic solution

29. Place a de-shelled egg in water for five minutes. What do you observe? (Note: De-shelled egg means,the shell of an egg is removed by dissolving it in dilute hydrochloric acid. The shell is mostly calcium carbonate. A thin outer skin now encloses the egg.)

What will happen if a de-shelled egg in a concentrated salt solution for 5 minutes?

30. Put dried raisins in plain water and leave them for some time. Then place them in concentrated solution of sugar or salt. What do you observe in both cases?

31. Viruses are

(a) Uni cellular micro-organisms

(b) Bi-Cellular micro-organisms

(c) Multi-cellular micro-organisms

(d) Non-cellular micro-organisms

32. Who is known as Father of Biology?

33. Who discovered Golgi apparatus?

34. Which cell organelle is known as "protein factory"?

35. What is the energy currency of the cell called?

36. When chromosomes are visible in the nucleus?

37. Which of the following is NOT involved in the synthesis of proteins?

(a) rough ER

(b) smooth ER

(c) Golgi body

(d) ribosomes

38. Are plastids present in all cells? What are its types?

39. Name the sac like structure which form the grana?

40. What are the conditions for osmosis?

41. Will the temperature have any effect on the process of the osmosis?

42. What is osmoregulation?

43. Which organ of the plant body helps in osmoregulation?

44. Which organelle of the cell in animals helps in osmregulation?

45. What are centrosomes? What functions do they perform?

46. Who is known as 'Father of Microscopy'?

47. Are Viruses Prokaryotic or Eukaryotic?

48. Which of the following often distinguishes plant cells from animal cells?

(a) centrioles

(b) nucleus

(c) chromatin

(d) rough ER

49. Which cell organelle is called "kitchen of plant"?

50. Which cell organelle is called 'control center'?

51. Which cell organelle is called 'transport system'?

52. What is Endoplasmic Reticulum(ER)? Name its types?

53. What are the functions of Endoplasmic Reticulum (ER)?

54. What are the components nucleus?

55. What is the function of nucleoplasm?

56. How chromatic network is related to chromosomes?

57. What are chromosomes?

58. What is the full form of DNA and RNA?

59. Who discovered Virus?

60. What are the function of nucleus?

61. Why can't single cells grow very large? Or Big organisms like human beings are multi-cellular? Why can't such big organisms be a single large cell?

62. Why do vegetable vendors (subzi-walla) regularly sprinkle water on the vegetables in their baskets?

63. Why do we stain cells while observing under microscope? List commonly used stains.

64. Are there any exceptions to cell theory proposed by Schleiden & Schwann and Virchow? If yes, what are those?

65. What is the thickness of cell membrane?

66. Why is mitochondria absent in red blood cells?

67. Name the cell organelles which their own DNA and Ribosomes.

68. What is cytoskeleton?

69. Name the cell organelles involved in synthesis, packaging and movement of protein (or other macromolecules) inside a cell.

70. Which of the following is an example of a single cell that does not function as a full fledged organism?

(a) White blood cells (WBC)

(b) Amoeba

(c) WBC and Amoeba

(d) Paramecium

ASSIGNMENT QUESTIONS SET – 3
CHAPTER – 5
THE FUNDAMENTAL UNIT OF LIFE

1. Which of the following can be made into crystal?

(a) A Bacterium

(b) An Amoeba

(c) A Virus

(d) A Sperm

2. A cell will swell up if

(a) The concentration of water molecules in the cell is higher than the concentration of water molecules in surrounding medium

(b) The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell

(c) The concentration of water molecules is same in the cell and in the surrounding medium

(d) Concentration of water molecules does not matter

3. Chromosomes are made up of

(a) DNA (b) protein

(c) DNA and protein (d) RNA

4. 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)

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

(a) It behaves as transport channel for proteins between nucleus and cytoplasm

(b) It transports materials between various regions in cytoplasm

(c) It can be the site of energy generation

(d) It can be the site for some biochemical activities of the cell

6. Following are a few definitions of osmosis. Read carefully and select the correct definition

(a) Movement of water molecules from a region of higher concentration to a region of lower concentration through a semipermeable membrane

(b) Movement of solvent molecules from its higher concentration to lower concentration

(c) Movement of solvent molecules from higher concentration to lower concentration of solution through a permeable membrane

(d) Movement of solute molecules from lower concentration to higher concentration of solution through a semipermeable membrane

7. Plasmolysis in a plant cell is defined as

(a) break down (lysis) of plasma membrane in hypotonic medium

(b) shrinkage of cytoplasm in hypertonic medium

(c) shrinkage of nucleoplasm

(d) none of them

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

(a) Mitochondria

(b) Vacuole

(c) Lysosome

(d) Plastid

9. Find out the false sentences

(a) Golgi apparatus is involved with the formation of lysosomes

(b) Nucleus, mitochondria and plastid have DNA; hence they are able to make their own structural proteins

(c) Mitochondria is said to be the power house of the cell as ATP is generated in them.

(d) Cytoplasm is called as protoplasm

10. Find out the correct sentence

(a) Enzymes packed in Lysosomes are made through RER (rough endoplasmic reticulum)

(b) Rough endoplasmic reticulum and smooth endoplasmic reticulum produce lipid and protein respectively

(c) Endoplasmic reticulum is related with the destruction of plasma membrane

(d) Nucleoid is present inside the nucleoplasm of eukaryotic nucleus

11. Which cell organelle plays a crucial role in detoxifying many poisons and drugs in a cell?

(a) Golgi apparatus

(b) Lysosomes

(c) Smooth endoplasmic reticulum

(d) Vacuoles

12. 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

13. The undefined nuclear region of prokaryotes are also known as

(a) nucleus

(b) nucleolus

(c) nucleic acid

(d) nucleoid

14. The cell organelle involved in forming complex sugars from simple sugars are

(a) endoplasmic reticulum

(b) ribosomes

(c) plastids

(d) golgi apparatus

15. 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

16. Amoeba acquires its food through a process, termed

(a) exocytosis

(b) endocytosis

(c) plasmolysis

(d) exocytosis and endocytosis both

17. Cell wall of which one of these is not made up of cellulose?

(a) Bacteria

(b) *Hydrilla*

(c) Mango tree

(d) Cactus

18. Silver nitrate solution is used to study

(a) endoplasmic reticulum

(b) golgi apparatus

(c) nucleus

(d) mitochondria

19. Organelle other than nucleus, containing DNA is

(a) endoplasmic reticulum

(b) golgi apparatus

(c) mitochondria

(d) lysosome

20. Kitchen of the cell is

(a) mitochondria

(b) endoplasmic reticulum

(c) chloroplast

(d) golgi apparatus

21. Lipid molecules in the cell are sythesized by

(a) smooth endoplasmic reticulum

(b) rough endoplasmic reticulum

(c) golgi apparatus

(d) plastids

22. Cell arises from pre-existing cell was stated by

(a) Haeckel

(b) Virchow

(c) Hooke

(d) Schleiden

23. Cell theory was given by

(a) Schleiden and Schwann

(b) Virchow

(c) Hooke

(d) Haeckel

24. The only cell organelle seen in prokaryotic cell is

(a) mitochondria

(b) ribosomes

(c) plastids

(d) lysosomes

25. Organelle without a cell membrane is

(a) ribosome

(b) golgi apparatus

(c) chloroplast

(d) nucleus