Chapter 5

THE FUNDAMENTAL UNIT OF LIFE

Multiple Choice Questions

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

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26. 1 μm is
(a) 10^{-6} m
(b) 10^{-9} m
(c) 10^{-10} m
(d) 10^{-3} m

27. Lysosome arises from
(a) endoplasmic reticulum
(b) golgi apparatus
(c) nucleus
(d) mitochondria

28. Living cells were discovered by
(a) Robert Hooke
(b) Purkinje
(c) Leeuwenhoek
(d) Robert Brown

29. 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

Short Answer Questions

30. Why are lysosomes known as 'suicide-bags' of a cell?

31. Do you agree that "A cell is a building unit of an organism". If yes, explain why?

32. Why does the skin of your finger shrink when you wash clothes for a long time?

33. Why is endocytosis found in animals only?

34. A person takes concentrated solution of salt, after sometime, he starts vomiting. What is the phenomenon responsible for such situation? Explain.

35. Name any cell organelle which is non membranous.

36. We eat food composed of all the nutrients like carbohydrates, proteins, fats, vitamins, minerals and water. After digestion, these are absorbed in the form of glucose, aminoacids, fatty acids, glycerol etc.
What mechanisms are involved in absorption of digested food and water?

37. If you are provided with some vegetables to cook. You generally add salt into the vegetables during cooking process. After adding salt, vegetables release water. What mechanism is responsible for this?

38. If cells of onion peel and RBC are separately kept in hypotonic solution, what among the following will take place? Explain the reason for your answer.

(a) Both the cells will swell.

(b) RBC will burst easily while cells of onion peel will resist the bursting to some extent.

(c) a and b both are correct.

(d) RBC and onion peel cells will behave similarly.

39. Bacteria do not have chloroplast but some bacteria are photoautorophic in nature and perform photosynthesis. Which part of bacterial cell performs this?

40. Match the following **A** and **B**

(A)	**(B)**
(a) Smooth endoplasmic reticulum	(i) *Amoeba*
(b) Lysosome	(ii) Nucleus
(c) Nucleoid	(iii) Bacteria
(d) Food vacuoles	(iv) Detoxification
(e) Chromatin material and nucleolus	(v) Suicidal bag

41. Write the name of different plant parts in which chromoplast, chloroplast and leucoplast are present.

42. Name the organelles which show the analogy written as under

(a) Transporting channels of the cell——

(b) Power house of the cell——

(c) Packaging and dispatching unit of the cell——

(d) Digestive bag of the cell——

(e) Storage sacs of the cell——

(f) Kitchen of the cell——

(g) Control room of the cell——

43. How is a bacterial cell different from an onion peel cell?

44. How do substances like carbon dioxide (CO_2) and water (H_2O) move in and out of the cell?

45. How does amoeba obtain its food?

46. Name the two organelles in a plant cell that contain their own genetic material and ribosomes.

47. Why are lysosomes also known as "scavengers of the cells"?

48. Which cell organelle controls most of the activities of the cell?

49. Which kind of plastid is more common in
(a) roots of the plant
(b) leaves of the plant
(c) flowers and fruits

50. Why do plant cells possess large sized vacuole?

51. How are chromatin, chromatid and chromosomes related to each other?

52. What are the consequences of the following conditions?
(a) A cell containing higher water concentration than the surrounding medium
(b) A cell having low water concentration than the surrounding medium.
(c) A cell having equal water concentration to its surrounding medium.

Long Answer Questions

53. Draw a plant cell and label the parts which
(a) determines the function and development of the cell
(b) packages materials coming from the endoplasmic reticulum
(c) provides resistance to microbes to withstand hypotonic external media without bursting
(d) is site for many biochemical reactions necessary to sustain life.
(e) is a fluid contained inside the nucleus

54. Illustrate only a plant cell as seen under electron microscope. How is it different from animal cell?

55. Draw a neat labelled diagram of an animal cell.

56. Draw a well labelled diagram of an eukaryotic nucleus. How is it different from nucleoid?

57. Differentiate between rough and smooth endoplasmic reticulum. How is endoplasmic reticulum important for membrane biogenesis?

58. In brief state what happens when
(a) dry apricots are left for sometime in pure water and later transferred to sugar solution?
(b) a Red Blood Cell is kept in concentrated saline solution?
(c) the Plasma-membrane of a cell breaks down?
(d) rheo leaves are boiled in water first and then a drop of sugar syrup is put on it?
(e) golgi apparatus is removed from the cell?

59. Draw a neat diagram of plant cell and label any three parts which differentiate it from animal cell.