Unit 8(Cell—Structure and Functions)

Multiple Choice Questions

Question. 1 Choose the correct statement with respect to unicellular organisms.
(a) In unicellular organisms, tissues work in coordination to perform different functions
(b) Unicellular organisms do not require food
(c) Unicellular organisms respire and reproduce
(d) AH unicellular organisms move by cilia
Answer. (c) The organisms which are made of single cell are called unicellular organisms. The single cell behaves as a complete organism performing basic functions such as respiration, reproduction, nutrition, movement, etc.

Question. 2 Majority of cells cannot be seen directly with our naked eyes because
(a) organisms are generally unicellular (b) cells are microscopic (c) cells are present only inside the body (d) cells are grouped into tissues
Answer. (b) A cell is the smallest and basic unit of life which has definite structure and performs a specific function. Most of them cannot be seen with naked eyes because they are microscopic (i.e very-very small).

Question. 3 Read the different combinations of terms given below:
(a) Cell wall, cell membrane, nucleus, plastid . (b) Cell wall, nucleus, ribosome, chromosome
(c) Cell membrane, mitochondria, ribosome, chromosome
(d) Cell membrane, ribosome, mitochondria, chloroplast
The correct combination of terms with reference to an animal cell is
Answer. (c) The correct combination of terms with reference to an animal cell is cell membrane, mitochondria, ribosome and chromosome. An animal cell does not have a cell wall, plastid and chloroplast, but these are present in plant cells.

Question. 4 Which one of the following terms is not a part of the nucleus?
(a) Ribosome (b) Nucleolus (c) Chromosome (d) Gene
Answer. (a) Ribosome is not a part of nucleus. They are found floating in the cytosol or attached to the endoplasmic reticulum.
Nucleus is the largest organelle in cell that contain thread-like structures called chromosomes on which genes are present. Nucleolus is the round irregular structures present inside nucleus.

Question. 5 A suitable term for the various components of cells is
(a) tissue (b) cell organelles
(c) chromosomes (d) genes
Answer. (b) Various components of cells are called cell organelles. Tissue is a group of similar cells which worktogether to perform a particular function. Also, Refer to Ans 3.

Question. 6 The jelly-like substance present in cells is called
(a) protoplasm (b) chloroplast
(c) chromosome (d) cytoplasm
Answer. (c) Cytoplasm is the transparent jelly like fluid which fills the cell between nucleus and cell membrane. Most of the chemical reactions which keep the cell alive takes place here.Protoplasm is the living substance of the cell. It includes the cytoplasm and nucleus. Chromoplasts are coloured plastids present in plant cell.Chromosomes are thread-like structures present in nucleus.

Question. 7 Read the following pair§ of examples of organisms.
(a) Moss and sponge (b) Yeast and Amoeba
(c) Bacteria and blue-green algae (d) Penicillium and Spirogyra
The pair that belongs to the group of prokaryotes is
Answer. (c) Bacteria and blue-green algae are examples of prokaryotes. These organisms consist of prokaryotic cell (no nuclear membrane, no well defined nucleus and no other cell organelles.

Question. 8 Read the following terms and select the pair that is related to inheritance of characters.
(a) cell wall and cell membrane (b) chromosome and mitochondria
(c) chloroplast and cell membrane (d) chromosome and genes
Answer. (d) Chromosomes and genes are related to inheritance of characters.Chromosomes are present in nucleus. They contain genes, which are unit of inheritance.

Question. 9 Choose the correct statements.
(a) Genes are located in the chromosomes
(b) Cell is located in the nucleus
(c) Chromosomes are located in the nucleolus
(d) Cell membrane surrounds the nucleus
Answer. (a) Genes are the unit of inheritance located in the chromosomes. The other statements are incorrect and their correct form are as:
Nucleus is located in the cell Chromosomes are located in the nucleus.
Cell membrane surrounds the cell and nuclear membrane surrounds the nucleus.

Question. 10 Green colour of leaves is due to the presence of the pigment
(a) chlorophyll (b) mitochondria
(c) ribosomes (d) chloroplast
Answer. (a) The pigment chlorophyll present in the chloroplasts, which is responsible for green colour of leaves. It can absorb solar energy for photosynthesis.

Question. 11 The unit of measurement used for expressing dimension (size) of cells is
(a) centimeter ‘r (b) millimeter
(c) micrometer (d) meter

Answer. (c) Micrometer is the unit of measurement used for expressing dimension of cell.

Question. 12 The most important function of cell membrane is that it
(a) controls the entry and exit of materials from cell
(b) controls only the entry of materials into cells
(c) controls only the exit of materials into cells
(d) allows entry and exit of materials without any control
Answer. (a) The cell membrane controls the entry (movement into the cell) and exit (movement out of the cell) of materials. It also protects and gives shape to the cell.

Question. 13 Paheli accidentally placed her hand over a flame and immediately pulled it back. She felt the sensation of heat and reacted due to the action of (a) blood cells (b) skin surface
(c) nerve cells (d) nucleus of cells
Answer. (c) Nerve cells have a special shape-long and branched (with projections) to receive and transmit message between the brain and other body parts. Thus they help to feel sensations and in responding to them.

Question. 14 Of the following parts of a cell name the part that is common to plant cell, animal cell and a bacterial cell.
(a) Chloroplast (b) Cell wall
(c) Cell membrane (d) Nucleus
Answer. (c) Cell membrane is the common part of every cell. It encloses the protoplasm, protects the cell, gives the cell its shape and control the entry and exit of substances.

Question. 15 The thre&Mike structures present in the nucleus are
(a) nucleolus (b) chromosomes (c) genes (d) ribosomes
Answer. (b) Chromosomes are the thread-like structures present in the nucleus. They contain genes that function to transfer the characteristics from the parents to the offsprings.

Question. 16 Identify the statement which is true for cells.
(a) Cells can be easily seen with naked eyes.
(b) Insect's egg is not a cell.
(c) A single cell can perform all the functions in a unicellular organism.
(d) The size and shape of cells is uniform in multicellular organisms.
Answer. (c) A unicellular organism consists of a single cell that is capable of performing all the functions.
The other statements in true form are:
Cells cannot be seen easily with naked eyes.
Insect's egg is a single cell.
The shape and size of cell are different in multicellular organisms.

Question. 17 Which of the following is not a cell?
(a) Red Blood Cell (RBC) (b) Bacterium
(c) Spermatozoa (d) Virus
Answer. (d) Virus is not considered a cell. It is an exception to the cell theory and cannot survive on its own.

Question. 18 Which of the following feature will help you in distinguishing a plant cell from an animal cell?
(a) Cell wall (b) Cell membrane
(c) Mitochondria (d) Nucleus
Answer. (a) A cell wall is the distinguishing feature between a plant cell and animal cell. It is thick wall made up of cellulose around cell membrane that exclusively present only in plant .

cell.

Question. 19 Under a microscope Paheli observes a cell that has a cell wall but no distinct nucleus. The cell that she observes is (a) a plant cell (b) a nerve cell (c) an animal cell (d) a bacterial cell

Answer. (d) The cell observed by Paheli is a bacterial cell. It is a prokaryotic cell that has a cell wall (like plants) but no distinct nucleus.

A plant cell has a cell wall and a well defined nucleus, whereas in an animal cell, the former is not present.

A nerve cell is an animal cell that is long and branched to function as transmitter between brain and other parts.

Question. 20 Cheek cells do not have

(a) cell membrane (b) Golgi apparatus (c) nucleus (d) plastid

Answer. (d) Cheek cells are animal cells. So, there will be no plastids. All other cell organelles such as nucleus, GA, ribosomes, etc are enclosed in the cell membrane of cell.

Question. 21 Identify the correct statement.

(a) Tissue is a group of dissimilar cells (b) An organ consists of similar cells (c) Vacuoles are not found in plant cells (d) Prokaryotes do not have nucleus

Answer. (d) Prokaryotes do not have a well defined nucleus. The irregularly-shaped region that contains their genetic material is called nucleoid.

The other statements in correct form are:

Tissue is a group of similar cells.

An organ consists of different tissues.

Large vacuoles are found in plant cells.

Question. 22 Which of the following statements are true for eukaryotic cells?

(i) They do not have a nuclear membrane.

(ii) They have a well organised nucleus.

(iii) They have a nuclear membrane.

(iv) Blue-green algae are eukaryotic cells.

(a) (ii) and (iv) (b) (ii) and (iii)

(c) (i) and (ii) (d) (i) and (iv)

Answer. (b) The cells having well defined nucleus containing nuclear material, enclosed by a nuclear membrane are called eukaryotic cells.

e.g. Cheek cells. Blue-green algae are prokaryotic cells that do not have a nuclear membrane.

Question. 23 Identify the correct statement about cells.

(a) All the cells have nucleus

(b) Cells of an organ have similar structure

(c) Cells of a tissue have similar structure

(d) Shape of all types of cells is round

Answer. (c) A tjssue is a group of similar cells that work together to perform a particular function. The other statements in correct form are:

• Only eukaryotic cells have well-defined nucleus.

• An organ is a collection of differentfissues.

• Shape of a cell depends on its function.

Very Short Answer Type Questions

Question. 24 The table given below has certain terms and four blank spaces named A, B, C and D.

Cell	Feature/part	Function
Amoeba	*A*	Movement
Plant cell	Plastid	*B*
C	Spindle-shaped	Contraction stimuli and response
Nerve cell	*D*	

From the options given below choose the correct combination of terms.
(a) A—Pseudopodia; B—Respiration; C—Muscle cell; D—Branched
(b) A—Pseudopodia; B—Photosynthesis; C—Muscle cell; D—Branched
(c) A—Contractile vacuole; B—Photosynthesis; C—Blood cell; D—Spindle-shaped
(d) A—Pseudopodia; B—Photosynthesis; C—Cheek cell; D—Spindle-shaped
Answer. (b) Amoeba keeps changing its shape due to the formation of pseudopodia that helps in movement and capturing food.
In a plant cell, green coloured plastids called chloroplasts are present. They are the sites of photosynthesis.
Muscle cells are spindle-shaped to bring about movement of body by contracting and relaxing.
Nerve cells are long and branched to receive the stimuli and transmit message to brain that sends the response.

Question. 25 In leaves name the cell organelle and pigment that is responsible for green colour.
Answer. The cell organelle is chloroplast and chlorophyll is the pigment responsible for green colour of leaves. It is because of this pigment that sunlight (energy) is captured by plant and photosynthesis takes place.

Question. 26 The instrument used to observe cells is
Answer. Microscope

Question. 27 We do not sense any pain when we clip our nails or cut our hair. Why?
Answer. Nails and hair are made up of dead cells. They do not have nerve cells, hence one does not feel pain, when they are clipped or cut.

Question. 28 In a cell, where are the genes located?
Answer. Genes are located on thread-like structures called chromosomes. These are present inside the nucleus. These are units of inheritance in living organisms, that control transfer of hereditary characteristics from parents to offsprings.

Question. 29 Amoeba and Paramecium belong to which category of organisms?
Answer. Amoeba and Paramecium are unicellular prokaryotic organisms, i.e. they are made up of a single cell and their nucleus is not well defined. No cell organelle is present.

Question. 30 What are the functions of cell wall in plant cells? .
Answer. Cell wall is an additional layer surrounding the plasma membrane in plant cells. Its functions are:
(i) to give shape and support to the plant cell.
(ii) to provide protection against variations in temperature, atmospheric moisture, etc.
(iii) prevents water loss.
(iv) controls the rate and direction of cell growth and regulates cell volume.

Short Answer Type Questions

Question. 31 Is the following statement correct? If it is wrong, correct the statement.
"Unicellular organisms do not respire, only multicellular organisms respire"

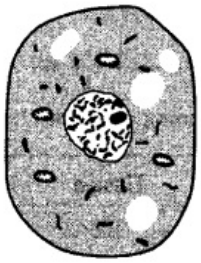
Answer. The above mentioned statement is wrong. The unicellular organisms also respire, reproduce and carry all metabolic functions like multicellular organisms.
The difference is that all the functions are performed by the single cell in a unicellular organism. Similar functions in multicellular organisms are performed by various organs (organ system) which are made up of many different types of cells.

Question. 32 Match the terms given in column I with their functions given in column II and fill the blanks given below the table:

	Column I		Column II
(a)	Chloroplast	(i)	Carries hereditary characters
(b)	Cell membrane	(ii)	Controls the activities of cells
(c)	Nucleus	(iii)	Site of photosynthesis
(d)	Chromosome	(iv)	Controls the movement of materials into and out of cells

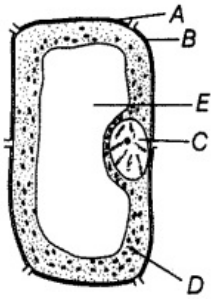
Answer. The correct matching is as given:
(a)-(iii), (b)-(iv), (c)-(ii), (d)-(i)

Question. 33 Observe the following figure given below.

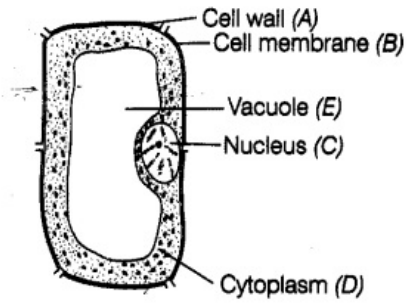


Answer the following questions.
(a) Does it represent a plant cell or an animal cell?
(b) Does it represent a prokaryotic cell or a eukaryotic ceH?
Answer. (a) The above diagram represents an animal ceil because cell is bounded by cell membrane. Cell wall is absent.
(b) The above diagram represents an eukaryotic cell as it has a well organised nucleus and also other cell organelles in it.

Question. 34 Label the parts A to E in the given figure.



Answer. The figure given in question, represents a plant cell. The various parts correctly labelled are as follows:



Question. 35 Classify the following terms into cells, tissues and organs and write in the tabular column given below.
RBC, WBC, nerve cell, blood, muscle, blood vessels, brain, heart, hand.

Cell	Tissue	Organ
.....	.....	.....
.....	.....	.....
.....	.....	.....

Answer.

Cell	Tissue	Organ
RBC	Blood	Blood vessels
WBC	Muscle	Heart
Nerve cell		Hand
		Brain

Question. 36 Read the following statements and write the appropriate term against each statement. '
(i) I control the functions of a cell. Who am I? ,
(ii) I am like a policeman. I do not allow anything and everything to get in and out of the cell. Who am I?
(iii) I transfer characters from parents to offsprings. Who am I?
Answer. (i) Nucleus controls the functions of a cell.
(ii) Cell membrane is like a policeman which does not allow everything and anything into and out of the cell.
(iii) Genes present on chromosomes transfer characters from parents to offsprings.

Question. 37 Fill in the blanks with the terms given in the box below:
Nucleus, chromosomes, cell wall, cell membrane, protoplasm cytoplasm, ribosome, cell organelles
The outermost layer of plant cells is the (a)..... beneath which is the (b).....The term (c) ..... refers to the jelly-like substance containing all the (d) The (e)..... contains thread-like structures called (f).....
Answer. (a) cell wall (b) cell membrane
(c) cytoplasm (d) cell organelles
(e) nucleus (f) chromosomes.

Long Answer Type Questions

Question. 38 Cells consist of many organelles, yet we do not call any of these organelles as structural and functional unit of living organisms. Explain.
Answer. The cell organelles like mitochondria, Golgi complex, ribosomes, nucleus, etc., have specific functions and carry out specific functions in a cell but they cannot be called as the

structural and functional units of living organisms.
This is because they can function only when present inside a living cell. They cannot act as independent units. The cei, on the contrary has independent existence. It is the smallest, structural and functional unit of life.

Question. 39 Why do plant cells have an additional layer surrounding the cell membrane? What is the layer known as?
Answer. The additional layer surrounding the cell membrane of plant cells is called cell wall. Since, the plants cannot show physical movement and escape themselves from extreme climatic conditions, therefore a cell wall is needed for protection.
The cell wall protects the plant cells from temperature variation, high wind speed, atmospheric moisture, etc. It also gives shape and support to plant cells.

Question. 40 The size of the cells of an organism has no relation with the size of its body. Do you agree? Give reason for your answer.
Answer. The size of the cells of an organism is not related with the size of its body. This can be understood with the example of an elephant and a rat.
The cells in elephant are not bigger as compared to the cells of small animal like rat. Hence, proving that cells are not related to the size of organism.
However, the size of a cell is related to the function it performs. The nerve cells in both rat and elephant are long and branched and perform the same function of transferring and receiving messages. Thus, helps in coordination of different functions of body parts.