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| **Karan Arora**  **R.L. Institute M: 9416974837**  **Class : IX**  **“THE FUNDAMENTAL UNIT OF LIFE”** |

**Worksheet – 1**

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 |

1. Cell arises from pre – existing cell was stated by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Haeckel | b) Virchow | c) Hooke | d) Schleiden |

1. Cell theory was given by :

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

1. The only cell organelle seen in prokaryotic cell is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Ribosomes | c) Plastids | d) Lysosomes |

1. Living cell were discovered by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Robert Hooke | b) Purkinje | c) Leeuwenhoek | d) Robert brown |

1. Which one of the following is not a unicellular organism?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Amoeba | b) Paramecium | c) Chlamydomonas | d) Fungi |

1. If a membrane allows passage of solvent freely but selects the passage of specific solute particles, it is called as :

|  |  |
| --- | --- |
| a) Impermeable | b) Permeable |
| c) Semi-permeable | d) Selectively permeable |

1. Fluid mosaic model was presented by :

|  |  |
| --- | --- |
| a) Singer and Nicolson (1972) | b) Danielli and Davson (1935) |
| c) Robertson (1959) | d) Robert brown (1858) |

1. Plasma membrane of the cell is :

|  |  |
| --- | --- |
| a) Permeable | b) Impermeable |
| c) Semi-permeable | d) Selectively permeable |

1. Following are few statements which may be related to functions of plasma membrane. Select the correct statements :
2. Plasma membrane maintains individuality of the cell.
3. Its junction keep the cells together.
4. It forms organelles with in the cytoplasm.
5. It protects the cell form injury.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i), (ii), (iii), (iv) only | b) (i), (ii) only | c) (i), (ii), (iv) only | d) (iii), (iv) only |

Fill in the Blanks :

1. Cells are the \_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_ units of all organisms.
2. Yeast, bacteria and all protists are examples of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms, wherein a single cell constitutes the whole organism.
3. If a membrane allow penetration of only solvent molecules but not the solute particles, it is called \_\_\_\_\_\_\_\_\_\_\_\_\_.
4. If a membrane does not allow both solvent and solute molecules to pass through it, it is called \_\_\_\_\_\_\_\_\_\_\_ membrane. Example of such membrane is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ model provides satisfactory explanation of the structural and functions of plasma membrane.

Answer The Following Questions :

1. Describe microscopic structure of Cell.
2. Who discovered Cell and How?
3. Why cell is called the structural and Fundamental unit of life?
4. What are the Postulates of Cell Theory?
5. Modern cell theory given by which scientist? and state its significance.
6. Differentiate between Unicellular and Multicellular Organisms.
7. Differentiate between Prokaryotic cell and Eukaryotic cell.
8. What is a nucleoid?
9. Plasma membrane is made up of which 2 components?
10. Why is Plasma membrane called Semi-permeable?
11. Name two type of protein present in Plasma membrane and distinguish them.

**Answers**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. a | 1. b | 1. a | 1. b | 1. c | 1. d | 1. d |
| 1. a | 1. d | 1. a |  | | |  |

1. Structural and Fundamental
2. Unicellular
3. Semipermeable
4. Impermeable , cuticle
5. Fluid Mosaic.

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**Worksheet – 2**

Multiple Choice Questions :

1. You expect RBCs to burst when they are placed in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Hypotonic solution | b) Hypertonic solution | c) Isotonic solution | d) Any of the above |

1. When dried raisins are put in pure water for sometime, they swell up. Swelling up of raisins occur due to:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Exosmosis | b) Endosmosis | c) Both (a) & (b) | d) Neither (a) & (b) |

1. Name the process by which CO2 moves out of the cells.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Diffusion | c) Phagocytosis | d) Pinocytosis |

1. Name the process by which water moves across the selectively permeable membrane.

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Diffusion | c) Osmosis | d) Exocytosis |

1. The phenomenon of shrinking of protoplast from the cell wall due to Exosmosis in a plant cell when placed in a hypertonic solution is called :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Dialysis | b) Deplasmolysis | c) Plasmolysis | d) Imbibition |

1. A plant cell placed in a hypotonic solution will not burst because of the presence of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cell wall | b) plasma membrane | c) chloroplast | d) Cytoplasm |

1. Plasmolysis in a plant cell is defined as :

|  |  |
| --- | --- |
| a) Break down of membrane in hypotonic medium. | b) Shrinking of cytoplasm in hypertonic medium |
| c) shrinking of nucleoplasm | d) None of these |

1. Amoeba acquires its food through a process, termed:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Exocytosis | b) Endocytosis | c) Plasmolysis | d) Both (a) & (b) |

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

|  |  |  |  |
| --- | --- | --- | --- |
| a) Bacteria | b) Hydrilla | c) Mango tree | d) Cactus |

1. A cell will swells up if :
2. The concentration of water molecules in the cell is higher than the concentration of water molecules in surrounding medium.
3. The concentration of water molecules in surrounding medium is higher than water molecules concentration in the cell.
4. The concentration of water molecules is same in the cell and in the surrounding medium.
5. Concentration of water molecules does not matter.
6. Chromosomes are made up of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) DNA | b) Protein | c) DNA & protein | d) RNA |

1. The two arms of each chromosome are termed :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chromatin fibres | b) Centromeres | c) Chromatids | d) None of these |

Fill in the Blanks :

1. The process that involves fusion of membrane of the waste containing vesicle with the plasma membrane to extrude its contents to the surrounding medium is called \_\_\_\_\_\_\_\_\_\_.
2. RBCs swell up and \_\_\_\_\_\_\_\_\_\_\_\_ when placed in hypotonic solution due to the phenomenon of \_\_\_\_\_\_\_\_\_\_\_\_.
3. Phenomenon of endocytosis is not shown by \_\_\_\_\_\_\_\_\_\_\_\_\_ cells because of their \_\_\_\_\_\_\_\_\_\_\_ and internal \_\_\_\_\_\_\_\_\_\_\_ pressure.
4. Primary cell wall in plants is chiefly made up of \_\_\_\_\_\_\_\_\_\_. The primary cell walls of adjacent cells are cemented through \_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The outer nuclear membrane bears \_\_\_\_\_\_\_\_\_\_\_ on the cytoplasmic side and at places is also connected with \_\_\_\_\_\_\_\_\_\_\_\_.
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ are thread like structures present in the nucleus and become visible only during cell division.
7. The two \_\_\_\_\_\_\_\_\_\_\_\_ of chromosome are attached at a point called primary constriction of \_\_\_\_\_\_\_\_\_\_\_.

Answer The Following Questions :

1. What is active transport?
2. Differentiate between active and passive transportation.
3. Define osmosis.
4. How do substances like CO2 and H2O move in and out of the cell?
5. Define: (a) Hypotonic solution (b) Hypertonic solution (c) Isotonic solution.
6. Define: (a) Exocytosis (b) Endocytosis.
7. Define: (a) Plasmolysis (b) Plasmodesmata.
8. Cell wall of plant cell is made up of \_\_\_\_\_\_\_\_\_\_.
9. Where are genes located?
10. Which organelle is associated with ribosomes formation?
11. What are chromosomes made up of? Differentiate between Chromatin , Chromatid and Chromosome.

**Answers**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. a | 1. b | 1. b | 1. c | 1. c | 1. a | 1. b |
| 1. b | 1. a | 1. b | 1. c | 1. c |  |  |

1. Exocytosis.
2. Burst , Endosmosis.
3. Plant , Cell wall , Turgor.
4. Cellulose , Middle lamella.
5. Ribosomes , endoplasmic Reticulum.
6. Chromosomes.
7. Chromatids , centromere.

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**Worksheet – 3**

Multiple Choice Questions :

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

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi apparatus | b) Lysosomes | c) SER | d) Vacuoles |

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

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Plasma membrane | d) Mitochondria |

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

|  |  |  |  |
| --- | --- | --- | --- |
| a) Storage | b) Provide turgidity & rigidity | c) Waste excretion | d) Locomotion |

1. Silver nitrate solution is used to study :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Nucleus | d) Mitochondria |

1. Organelle other than nucleus, containing DNA is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Mitochondria | d) Lysosome |

1. Lipid molecules in the cell are synthesized by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) SER | b) RER | c) Golgi apparatus | d) Plastids |

1. Organelle without a cell membrane is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Ribosomes | b) Golgi apparatus | c) chloroplast | d) Nucleus |

1. Lysosomes arises from :

|  |  |  |  |
| --- | --- | --- | --- |
| a) ER | b) Golgi apparatus | c) Nucleus | d) Mitochondria |

1. Which of the following are present in plant cells and not in animal cells?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria & Plastids | b) Mitochondria & Cell wall | c) Cell wall & Lysosomes | d) Cell wall & Plastids |

1. In plant cells, many small Golgi complexes called dictyosomes are found lying :

|  |  |
| --- | --- |
| a) Scattered throughout the cytoplasm | b) At specific site close to nuclear membrane |
| c) Attached to green plastids | d) Attached to cell membrane |

1. Which type of plastids provide various colours to flowers to attract insects for pollination?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chloroplasts | b) Amyloplasts | c) Aleuroplasts | d) Chromoplasts |

1. Which main light absorbing pigment is present in green plastids?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Xanthophyll | b) Chlorophyll | c) Phycobilin | d) Carotenoids |

1. Infolds of inner membrane of chloroplasts, when become free, lie in the matrix as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cristae | b) Stroma | c) lamellae | d) none of these |

1. What is the energy currency of the cell?

|  |  |  |  |
| --- | --- | --- | --- |
| a) ADP | b) AMP | c) ATP | d) FAD |

1. How many daughter cells are formed in meiosis?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 | b) 2 | c) 3 | d) 4 |

1. How many consecutive divisions occur in meiosis?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 | b) 1 | c) 3 | d) 4 |

Fill in the Blanks :

1. Golgi complex was discovered by \_\_\_\_\_\_\_\_\_\_ in 1898.
2. 70 S types ribosomes are found in \_\_\_\_\_\_\_\_\_ cells and 80 S types ribosomes are found in \_\_\_\_\_\_\_\_\_\_\_ cells.
3. Mitosis helps in \_\_\_\_\_\_\_\_\_\_\_ and repair of tissues by replacing old, worn out dead cells or injured cells in organisms
4. Mitosis is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as it forms equal sized 2 daughter cells, each having same number of chromosomes and DNA amount as that of mother cell.
5. Meiosis occurs only in specific cells are called \_\_\_\_\_\_\_\_\_\_\_\_\_ and produces \_\_\_\_\_\_\_\_\_\_\_\_\_ daughter cells, each having \_\_\_\_\_\_\_\_\_\_\_\_\_ the number of chromosomes as that of mother cell.

Answer The Following Questions :

1. Name a cell organelle which is non-membranous.
2. Why is the Golgi apparatus is called secretory organelle of the cell?
3. Answer the following questions :

(a) Transporting channel of the cell (b) Packaging unit of the cell (c) Digestive bag of the cell (d) Storage sac of the cell (e) Power house of the cell (f) Kitchen of the cell

1. Differentiate between Smooth Endoplasmic Reticulum and Rough Endoplasmic Reticulum.
2. Draw labelled diagram of mitochondria. Write the functions of mitochondria.
3. Why Lysosomes called suicidal bad of the cell?
4. Where are protein synthesis occur inside the cell?
5. Draw labelled diagram of Bacterial , Plant and animal cell.
6. What is cell division. Give the types of cell division.

**Answers**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 1. c | 1. a | 1. d | 1. b | 1. c | 1. a | 1. a |
| 1. b | 1. d | 1. a | 1. d | 1. b | 1. a | 1. c |
| 1. d | 1. a |  |  |  |  |  |

1. Camillo Golgi.
2. Prokaryotic cell , Eukaryotic cell.
3. Growth.
4. Equational Division.
5. Meiocytes , 4 , half.