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| **Neha Malhotra**  **R.L. Institute M: 9416974837**  **Class : XI**  **“CELL: THE UNIT OF LIFE”** |

**Max Time : 1 hr Worksheet – 1 Max Marks = 120**

**(Based on Cell and Prokaryotic cell)**

1. A protoplast is a cell :

|  |  |
| --- | --- |
| a) without nucleus | b) undergoing division |
| c) without cell wall | d) without plasma membrane |

1. Names of Schleiden and Schwann are associated with :

|  |  |
| --- | --- |
| a) Protoplasm as the physical basis of life | b) Cell theory |
| c) Theory of cell lineage | d) nucleus functions as control centre of cell |

1. What is correct about cell theory in view of current status of our knowledge about cell structure?
2. It needs modification due to discovery of subcellular structures like chloroplasts and mitochondria.
3. Modified cell theory means that all living beings are composed of cells capable of reproducing.
4. Cell theory does not hold well because all living beings (e.g. virus) do not have cellular organization.
5. Cell theory means that all living objects consists of cells whether or not capable of reproducing.
6. What Robert Hooke first observed under microscope as a cell, were in fact?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Honeycomb | b) cell membrane | c) cell wall | d) Xylem vessels |

1. ‘The living matter of an organism is not cell but protoplasm’ is called Protoplasmic theory was given by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Max Schultz | b) Purkinje | c) Dujardin | d) F. C. Steward |

1. Who proposed the theory that ‘Cells arise only from the pre-existing cells’?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mohl | b) Virchow | c) Haeckel | d) Brown |

1. Schleiden and Schwann proposed :

|  |  |
| --- | --- |
| a) Phenomenon of Brownian movement | b) Cell theory or cell doctrine |
| c) Protoplasm as physical basis of life | d) None of the above |

1. Which of the following depicts the correct fundamental features of cell theory?
2. All cells share similar chemistry and physiology.
3. All living organisms are composed of cells and their products.
4. Each cell is made up of a small mass of protoplasm containing a nucleus inside and a plasma membrane with or without a cell wall outside.
5. Activities of an organism are the sum total of activities and interaction of its constituents cells.

|  |  |  |  |
| --- | --- | --- | --- |
| a) (i) is correct | b) (ii) & (iii) are correct | c) (ii),(iii) & (iv) are correct | d) All are correct |

1. Living beings are made up of cells. This statement belongs to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lamarck | b) Vol Helmont | c) Hugo de vries | d) Schleiden & Schwann |

1. Select the incorrect option.
2. Anton von Leeuwenhoek first saw and described a live cell.
3. Robert Brown later discovered the nucleus.
4. Unicellular organisms are incapable of independent existence.
5. All of these
6. Difference between Prokaryotic and Eukaryotic cells in the presence or absence of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cell wall | b) Nuclear membrane | c) Ribosomes | d) None of these |

1. Which of the following is present in both prokaryotes and Eukaryotes?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lysosomes | b) Vesicles | c) Chloroplast | d) Plasma membrane |

1. Which of the following statements about inclusion bodies is incorrect?

|  |  |
| --- | --- |
| a) These are involved in ingestion of food particles | b) They lie free in the cytoplasm |
| c) These represent reserve material in cytoplasm | d) They are not bound by any membrane |

1. Which of the following nucleic acid is present in an organism having 70 S ribosomes only?
2. Double stranded circular DNA with histones
3. Single stranded DNA with protein coat
4. Double stranded circular naked DNA (i.e. non-histone)
5. Double stranded DNA enclosed in nuclear membrane
6. Which one of the following is not an inclusion body found in prokaryotes?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cyanophycean granules | b) Glycogen granules | c) Polysomes | d) Phosphate granules |

1. Which structures perform the function of mitochondria in bacteria?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Nucleoid | b) Ribosomes | c) Cell wall | d) Mesosomes |

1. The term ‘Glycocalyx’ is used for :
2. A layer surrounding the cell wall of bacteria
3. A layer present between cell wall and membrane of bacteria
4. Cell wall of bacteria
5. Bacterial cell glycol-engineered to possess N-glycosylated proteins.
6. What is a capsule advantageous to a bacterium?
7. It allows the bacterium to attach to the surface
8. It protects the bacterium from desiccation
9. It provides means of locomotion.
10. It allows bacterium to hide from host’s immune system.
11. Cell wall of prokaryotes is made up of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chitin | b) Cellulose | c) Pectin | d) Mucopeptide |

1. In prokaryotes, chromatophores are :
2. Specialized granular responsible for colouration of cells.
3. Structures responsible for organizing the shape of the organism.
4. Inclusion bodies lying free inside the cells for carrying out various metabolic activities.
5. Internal membrane system which become extensive and complex in photosynthetic bacteria (Cyanobacteria).
6. The genetic material in prokaryotes is :

|  |  |
| --- | --- |
| a) not envelope by any membrane | b) Associated with histones |
| c) enveloped by nuclear membrane | d) do not contain genetic material |

1. In a prokaryotic cell:

|  |  |  |
| --- | --- | --- |
| 1. Enveloped genetic material is present | 1. Ribosomes are absent | 1. An organized nucleus is absent |

Choose the correct option :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Only (i) | b) Only (ii) | c) Only (iii) | d) All the above |

1. Correct sequence of layers of bacterial cell envelope is :

|  |  |
| --- | --- |
| a) Cell membrane Glycocalyx cell wall | b) Glycocalyx cell wall Cell membrane |
| c) Cell wall Glycocalyx cell membrane | d) Glycocalyx cell membrane Cell wall |

1. A nucleoid represent genetic material of prokaryotes and is known as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Prochromosomes | b) Genophore | c) Incipient nucleus | d) All of these |

1. Mesosomes are the infoldings of cell membrane. They :
2. Help in cell wall formation, DNA replication and respiration.
3. Increase surface area of plasma membrane.
4. are present in both prokaryotes and eukaryotes.

Choose the correct option :

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

1. Many bacteria have small circular DNA outside the genomic DNA. These smaller DNA are called as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Nucleoid | b) Mesosome | c) Glycocalyx | d) plasmid |

1. Mesosomes were taken as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi bodies | b) Plastids | c) Mitochondria | d) ER |

1. If fimbriae are removed from bacterial cell, which of the following would be expected to happen?
2. Bacterium could no longer be able to swim.
3. Bacterium would not be able to attach to rocks in streams.
4. Bacteria shape would change
5. None of these
6. The longest portion of bacterial flagellum that extends from the cell surface to the outside is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Hook | b) Filament | c) Basal body | d) All of these |

1. Bacterial cells are often found in very hypotonic environments. Which of the following characters prevent them from continuing to take on water from their environment.
2. The presence of cell wall allows a buildup of turgor pressure that prevents any more water from entering the cell.
3. The presence of a cell wall allows a buildup of tonic pressure that prevents any more water from entering the cell.
4. The cell expels water as fast as it take it up.
5. None of the above.

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**Max Time : 1 hr Worksheet – 2 Max Marks = 140**

**(Based on Eukaryotic cell [upto Ribosomes])**

1. Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells?

|  |  |  |  |
| --- | --- | --- | --- |
| a) peroxisomes | b) Golgi bodies | c) Polysomes | d) ER |

1. Which of the following cell organelles is present in the highest number in secretory cells?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lysosomes | b) Mitochondria | c) Golgi complex | d) ER |

1. Which of the following cell organelles is responsible for extracting energy from carbohydrates to form ATP?

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

1. Middle lamella is composed mainly of:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Muramic acid | b) calcium pectate | c) phosphoglycerides | d) hemicellulose |

1. The two sub-units of ribosome remain united a critical ion level of :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Copper | b) manganese | c) Magnesium | d) calcium |

1. Select the wrong statement from the following :
2. Both chloroplasts and mitochondria have an internal compartment, the thylakoid space bounded by the thylakoid membrane
3. Both chloroplasts and mitochondria contain DNA.
4. The chloroplasts are generally much large than mitochondria
5. Both chloroplast and mitochondria contain an inner and an outer membrane
6. Lysosomes have a high content of

|  |  |  |  |
| --- | --- | --- | --- |
| a) Hydrolytic enzymes | b) Lipoproteins | c) Polyribosomes | d) DNA ligase |

1. The function of RER is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Fat synthesis | b) lipid synthesis | c) protein synthesis | d) steroid synthesis |

1. Inner membrane convolution of a mitochondria are known as:

|  |  |  |  |
| --- | --- | --- | --- |
| a) Lamellae | b) thylakoids | c) grana | d) cristae |

1. Oxysomes of Fo-F1 particles occur on :

|  |  |
| --- | --- |
| a) Thylakoids | b) mitochondrial surface |
| c) inner mitochondrial membrane | d) chloroplast surface |

1. Which one is apparto reticularae?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi apparatus | b) ER | c) Microfilaments | d) Microtubules |

1. Fluid mosaic model was put forward by :

|  |  |
| --- | --- |
| a) Danielli and Davson | b) Singer and Nicolson |
| c) Garner and Allard | d) Watson and Crick |

1. Ribosomes were discovered by :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Golgi | b) Porter | c) De Robertis | d) Palade |

1. Cell wall shows :

|  |  |
| --- | --- |
| a) completely permeability | b) semi permeability |
| c) differential permeability | d) impermeability |

1. Amphipathic molecule in plasma membrane is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) protein | b) carbohydrates | c) phospholipids | d) all of these |

1. Ingestion of solid food by plasma membrane is called :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Endosmosis | b) Pinocytosis | c) Cytokinesis | d) Phagocytosis |

1. Which method of transport through plasma membrane does not require carrier molecule?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Active transport | b) facilitated diffusion | c) simple diffusion | d) Na+ – K+ pump |

1. Which of the following represents a hypotonic solution?
2. The solution has a greater solute concentration than the one it is being compared to.
3. The solution has a lesser solute concentration than the one it is being compared to.
4. The solution has an equal solute concentration than the one it is being compared to.
5. None of the above
6. Select the correct statement from the following regarding cell membrane.
7. Na+ and K+ ions move across cell membrane by passive transport
8. Proteins make up 60 to 70 % of the cell membrane
9. Lipids are arranged in a bilayer with polar heads towards the inner part
10. Fluid mosaic model of cell membrane was proposed by Singer & Nicolson.
11. Which one of the following structures between two adjacent cells is an effective transport pathway?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Plasmodesmata | b) Plastoquinone | c) ER | d) Plasmalemma |

1. Which one of the following has its own DNA?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Mitochondria | b) Dictyosomes | c) Lysosome | d) peroxisomes |

1. Which of the following organelle is directly connected to the outer membrane of nucleus in a eukaryotic cell?

|  |  |  |  |
| --- | --- | --- | --- |
| a) mitochondria | b) lysosome | c) Golgi apparatus | d) ER |

1. Where in a Eukaryotic cell can DNA be found?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Nucleus | b) Mitochondria | c) chloroplast | d) all of the above |

1. Active transport differs from passive transport in that active transport :
2. Requires energy
3. Always requires input of ATP.
4. Moves molecules against a concentration gradient.
5. Both (a) and (c)
6. Which of the following macromolecules are found in the plasma membrane?

|  |  |
| --- | --- |
| a) Lipids only | b) lipids and proteins |
| c) lipids , proteins and carbohydrates | d) Proteins and carbohydrates |

1. lamellae of chloroplasts are known as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Granum | b) Frets | c) thylakoids | d) Stroma lamella |

1. Which of the following substances are stored in Aleuroplasts?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Starch | b) oil and lipids | c) proteins | d) Water and oils |

1. The bright colour of ripe fruits are due to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Leucoplasts | b) chloroplast | c) Amyloplasts | d) Chromoplasts |

1. The 80S ribosomes are found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Eukaryotic cells | b) Prokaryotic cells | c) Bacterial cells | d) Cyanobacterial cells |

1. What would happen if lysosomes gets ruptured inside the cells in which they are present?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Cell will swell | b) Cell will shrink | c) Cell will die | d) nothing happens |

1. Lysosomes along with their food content is called :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Primary Lysosome | b) secondary Lysosome | c) residual bodies | d) cytosome |

1. Cristae are infoldings of :

|  |  |
| --- | --- |
| a) Surface of grana | b) surface of plasma membrane |
| c) Membrane of mitochondria | d) nuclear membrane |

1. According to fluid mosaic model of cell membrane :
2. Proteins are rigidly fixed in the phospholipids bilayer.
3. The most common types of molecules in the membrane are proteins
4. Basic membrane structures results from the ways in which proteins interact with water.
5. The membrane is a highly mobile mixture of phospholipids and proteins.
6. Polyribosomes are aggregates of :
7. Ribosomes and rRNA
8. only rRNA
9. peroxisomes
10. Several ribosomes held together by string of mRNA.
11. According to fluid mosaic model plasma membrane is composed of :
12. phospholipids and oligosaccharides
13. phospholipids and hemicellulose
14. phospholipids and integral protein
15. phospholipids , extrinsic protein and intrinsic protein

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**Max Time : 1 hr Worksheet – 3 Max Marks = 80**

**(Based on Cytoskeleton and Nucleus)**

1. The solid linear cytoskeletal elements having a diameter of 6 nm and made up of single type of monomer are known as :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Microtubules | b) Microfilaments | c) Intermediate filament | d) Lamins |

1. Ribosomal RNA is actively synthesized in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) lysosomes | b) Nucleolus | c) Nucleoplasm | d) Ribosomes |

1. Cytoskeleton is made up of :

|  |  |
| --- | --- |
| a) callose deposits | b) Cellulosic microfibril |
| c) proteinaceous filament | d) calcium carbonate granules |

1. Flagella of prokaryotic and Eukaryotic cells differ in :

|  |  |
| --- | --- |
| a) type of movement and placement in cell | b) location in cell and mode of functioning |
| c) microtubule organization and type of movement | d) microtubular organization and function |

1. Nuclear DNA exists as a complex of proteins called \_\_\_\_\_\_ that condenses into \_\_\_\_\_\_ during cellular division.

|  |  |
| --- | --- |
| a) chromosomes , chromatin | b) chromatid , chromosome |
| c) chromatids, chromatin | d) chromatin , chromosomes |

1. The principle protein of cilia and flagella is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Tubulin | b) Nexin | c) Myosin | d) albumin |

1. The protein present in the axoneme of cilia/flagella, having ATPase activity is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Nexin | b) Dynein | c) Myofibrils | d) tubulin |

1. Each centriole has a cert wheel organization having a whorl of 9 peripheral fibrils, can be represented with:

|  |  |
| --- | --- |
| a) 9 singlet + 0 central | b) 9 doublet + 0 central |
| c) 9 triplet + 2 central singlet | d) 9 triplet + 0 central |

1. The poly nucleated condition appeared by free nuclear division without cytokinesis occur in plant cell is :

|  |  |
| --- | --- |
| a) Syncytium | b) Coenocytic |
| c) Found in amphibian oocyte | d) All the above |

1. Peroxisomes are rich in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) DNA | b) RNA | c) Catalytic enzymes | d) Oxidative enzymes |

1. Peroxisomes in plant cell are involved in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Photo oxidation | b) Photo respiration | c) Photo phosphorylation | d) Photolysis of water |

1. Cilia and flagella both have :

|  |  |
| --- | --- |
| a) 9 + 2 arrangement of microtubule | b) protective structure of cells |
| c) Only present in protozoa animals | d) Only outgrowth structure of cytoplasm |

1. The function of centrosome is :

|  |  |
| --- | --- |
| a) To inhibit cell division | b) to initiate cell division |
| c) To increase protein synthesis | d) none of the above |

1. Number of protofilament in microtubule is :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 10 | b) 12 | c) 5 | d) 13 |

1. Hereditary characters are due to :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Chromosomes | b) gene | c) Blood | d) Placenta |

1. Nucleolus is found in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) protoplasm | b) nucleus | c) cytoplasm | d) none of these |

1. The function of nucleolus is the synthesis of:

|  |  |  |  |
| --- | --- | --- | --- |
| a) DNA | b) mRNA | c) rRNA | d) tRNA |

1. Microtubules, motor proteins and actin filaments are all parts of the :
2. Mechanism of photosynthesis that occurs in chloroplast
3. Rough ER in prokaryotic cells
4. Cytoskeleton of eukaryotic cells
5. Process that moves small molecules across cell membranes.
6. Match column I and column II

|  |  |  |
| --- | --- | --- |
| Column I | Column II | |
| A. Centriole | I. Infoldings of mitochondria | |
| B. Chlorophyll | II. Thylakoids | | |
| C. Cristae | III. Nucleic acids | |
| D. Ribozymes | IV. Basal body cilia or flagella | |
| a) A – IV ; B – II ; C – I ; D – III | | | b) A – I ; B – II ; C – IV ; D – III | | |
| c) A – I ; B – III ; C – II ; D – IV | | | d) A – IV ; B – III ; C – I ; D – II | | |

1. Ribosomal RNA is actively synthesized in :

|  |  |  |  |
| --- | --- | --- | --- |
| a) lysosomes | b) Nucleolus | c) Nucleoplasm | d) Ribosomes |