QB365

Important Questions - Cell : The Unit of Life

11th Standard CBSE

Biology

Reg.No. : | | | | | | |

Time : 01:00:00 Hrs

Total Marks : 50

Section-A

1) Which layer is referred to as cementing layer and why? **1**

2) Which type of endopasmic reticulum has its main functioning in the synthesis of lipid? **1**

3) What is the shape of WBCs and tracheid? **1**

4) Where is glycocalyx been found? **1**

5) Given one difference between the characteristic feature of Gram positive and Gram negative bacteria. **1**

6) What is referred to as satellite chromosome? **1**

7) Name the only organelle found in prokaryotic cell. **1**

8) What is the term given to the 70S ribosomes found in the matrix of chloroplast? **1**

9) Write about cellular autonomy in unicellular organisms. **1**

10) What are the disadvantage of multicellularity? **1**

Section-B

11) What is the benefit of cell wall in plant cells? **2**

12) What is the difference between cell walls of Gram positive and Gram negative bacteria? **2**

13) Mention two functions of the centrioles. **2**

14) What are the main structures within the cell nucleus? **2**

15) Justify the statement, 'Mitochondria is the powerhouse of the cell' **2**

16) What is the advantages of phospholipid bilayers fluidity? **2**

17) What are the major functions of plant cell vacuoles?What is the covering membrane of the vacuoles called? **2**

18) What are plasmids? Describe their role in bacteria. **2**

19) Distinguish between the cell membrane and cell wall. **2**

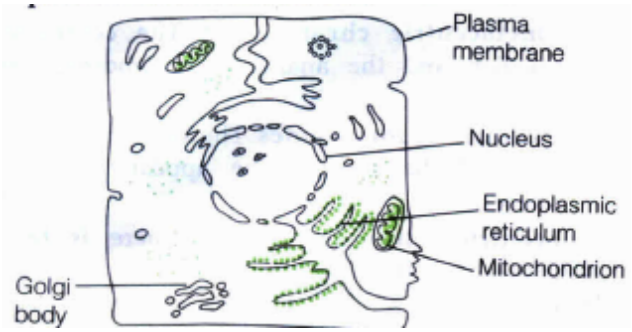
20) The lysosomal enzyme does not destroy the cell's own cytoplasm.why? **2**

Section-C

21) State the chief functions of mitochondria. **5**

22) Distinguish between chloroplast and chromoplast. **5**

23) The diagram shows some of the structures present in an animal cell. **5**



Which of these structures is responsible for

(i) Manufacture of lipids and steroids

(ii) Release of energy

(iii) Manufacture of hormones and digestive enzymes

(iv) Production of spindle fibres in cell division

(v) Endo and exocytosis?

24) Describe the structure of the following with the help of labelled diagram **5**

(i) Nucleus

(ii) Centrosome

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Section-A

1) **1**

Middle lamellae is referred to as cementing layer because it holds the primary cell wall of adjacent cells together.

2) Smooth Endoplasmic Reticulum (SER), helps in synthesis of lipid. **1**

3) WBCs ae amoeboid and tracheids are elongated in shape. **1**

4) Glycocalyx is found as a thick outermost covering of cell either as a capsule or a slime layer. **1**

5) **1**

Gram positive bacteria retain crystal violet dye and stain blue in colour, while Gram negative bacteria loose colour on washing.

6) **1**

Sometimes, few chromosome have non-staining secondary constrictions at a constant location. This gives the appearance of a small fragment called satellite.

7) Ribosomes **1**

8) The term given is plastido ribosomes. **1**

9) Unicellular organisms possess the following cellular autonomy **1**

(i) The cell has complete independent existence.

(ii) All life activities are carried out by the same cell.

(iii) Division of labour is absent.

(iv) The cell depends upon its own internal and intrinsic information.

10) The disadvantage of multicellularity are **1**

(i) Specialised cells often lose the power of division, so that injury is not repaired.

(ii) Regeneration ability of multicellular organisms decreases with specialisation.

(iii) Specialised cells may lose vital functions in order to carry out a specific activity.

Section-B

11) **2**

Cell wall is stronger and less impervious than plasma membrane. It tends to provide greater mechanical strength to plants. Since plants have to withstand vagaries of nature and they cannot run for safety, so they need a stronger structure. Cell wall also prevents entry of undesirable matters in cell and facilitates the exchange of materials among cells.

12) **2**

The cell of Gram positive bacteria is single-layered (outer membrane is absent) and contains 70-80% peptidoglycan and little amount of lipids. It's wall also has teichoic acid. The light cell wall of Gram negative bacteria on the other hand is two-layered, outer membrane is present, i.e., thin layer of peptidoglycan and plasma membrane is present, teichoic acid is absent in wall.

13) **2**

Functions of the centrioles are

(i) The centrioles play a vital role in cell division by forming spindle fibres, which act as guides for the alignment of the chromosomes as they separate later during the process of cell division.

(ii) The centrioles are also responsible for the formation of basal bodies, cilia and flagella.

14) **2**

The main structures within the cell nucleus are

(i) The nucleus which is an optically dense region, spherical shaped, where there are concentrated ribosomal RNA associated to proteins.

(ii) The chromatin made up of DAN molecules dispersed in the nuclear matrix during the cell interphase.

(iii) The nuclear membrane that delimits the nucleus.

15) **2**

Mitochondria are known as the power house of the cell because they generate ATP, the energy currency of the cell. Terminal oxidation takes place through oxidative phosphorylation. This produces ATP. Even the reduced coenzymes produced in cytosol through glycolysis, transfer their reducing power to mitochondria for ATP synthesis. ATP synthesised inside mitochondria provides energy for all cellular activities including overcoming the tendency for entropy. Hence, known as powerhouse of the cell

16) **2**

Interaction of molecules within the membrane, intercellular functions, secretion, endocytosis are the advantages of lipid bilayer fluidity.

17) **2**

Vacuoles in plant cell contain not only unuseful substances and water, but also contain pigments and toxic molecules. Tonoplast is the covering membrane of the vacuoles.

18) **2**

A plasmid is usually a circular (sometimes linear) piece of double-stranded DNA found in bacteria that is different from bacterium's chromosome. It carries non-essential genes that can augment a bacterium's ability to survive in certain circumstances.

For example, plasmids carry genes that enable a bacterium to metabolise a certain type of nutrient otherwise it cannot enable to conjugate. Plasmids are used for vast variety of experiments from expressing human genes in bacterial cells to DNA sequencing.

19) **2**

Cell Membrane	**Cell Wall**
It is found in both prokaryotes and eukaryotes	It is found in only plant cells as well as bacteria, fungi, algae and some archaea, i.e., absent in animal cells and Protozoa
Its function is to separate the components inside the cell from outside	Its function is to provide barrier to undesirable sustain and attack of pathogen
It provides support to the cytoskeleton of the cell, give shape to the cell	It provides strength and rigidity to the cell

20) **2**

The lysosomal enzyme does not destroy its own cytoplasm, because of the following reasons

(i) The enzymes are separated from the cytoplasm by the lysosomal membrane.

(ii) The enzymes have the capability of recognishing and digest only foreign matter.

(iii) The lysosomal enzymes usually work in the acidic medium of pH less than 7 and the medium is more than 7 i.e. around 7.4 or more.

Section-C

21) **5**

Mitochondria perform the following major functions

(i) Mitochondria are the main site of aerobic respiration, where respiratory substrates are completely oxidised to carbon dioxide and water. The energy liberated in the process is utilised in the synthesis of energy-rich molecules ATP.

(ii) They have a group of enzymes that carry out elongation of fatty acids of adding acetyl Co-A and subsequently reducing the keto-acid and produced

(iii) The matrix of mitochondria has enzymes thge synthesis of fatty acids.

22) **5**

Chloroplasts	**Chromoplasts**
They contain mainly chlorophylls and some amount of carotene and xanthophyll	They contain mainly carotene and xanthophyll
They are present in the mesophyll of leaves	They are present in the petals of flowers, the skin of fruits, etc.
Their main role is to prepare food by the process of photosynthesis	Their main role is to impart coloration to plants

23) Structures responsible are **5**

(i) Smooth endoplasmic Reticulim (SER) is responsible for the manufacture of lipids and steroids.

(ii) Mitochondrion is responsible for the release of energy.

(iii) Ribosomes is responsible for the production of hormones and digestive enzymes.

(iv) Centrioles is responsible for production of spindle fibres.

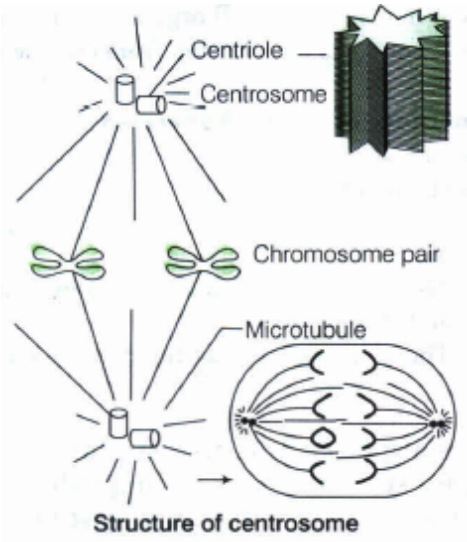
(v) Plasma membrane is responsible for endo and exocytosis.

24) **5**

(i) Nucleus: It is a naked, round and slightly irregular structure, which is attached to the chromatin at a specific region. The content of nucleolus is continuous with the rest of the nucleoplasm as it is not a membrane bound structure.

It is a site for active ribosomal RNA synthesis.Larger and more numerous nucleoli are present in cells activitely carrying out protein synthesis.

(ii)



Structure of centrosome