CBSE Class 11 Biology

Important Questions

Chapter 8

Cell The Unit of Life

1 Marks Questions

1.Define totipotency?

Ans. Each vegetative plant cell has capacity to develop into a full plant. This characteristic of plant is called totipotency.

2.Name two cell organelles which contain their own DNA?

Ans. Mitochondria & chloroplast.

3.Which cell organelle functions as "seggregation apparatus"?

Ans. Endoplasmic Reticulum (ER)

4.Which structure is called little nucleus?

Ans. Nucleolus.

5.What is the function of contractile vacuole?

Ans. Water balance or osmoregulation.

6.Name the enzymes present in peroxysomes?

Ans. Catalase & B- hydroxyoxidase.

7.Who gave the statement "Omnis cellular cellula"?

Ans. Rudolf Virchow.

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8.Which organelle is called the engine of the cell?

Ans. Ribosomes where protein synthesis occurs

9.What is mycoplasma ?

Ans. Mycoplasma is aerobic prokaryote. Cell wall is absent in them & they have a nucleoid.

10.Why is karyotype done at metaphase?

Ans. Because metaphase chromosomes with two chromatids strands of each double chromosome held together at the centromere are clearly seen.

11.Expand PPLO.

Ans. Pleuropneum onia like organisms.

12.Name the parts of bacterial flagella.

Ans. Filament, hook, basal body.

13. What do elaioplasts and aleuroplasts store?

Ans. Elaioplasts: fats and oils.

Aleuroplasts: proteins.

14.Who first saw and described a live cell?

Ans. Anton Von Leeuwenhoek

15.Which is the largest single cell?

Ans. Egg of ostrich.

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16.Who firs explained that Cell arose from pre-existing cells?

Ans. Rudolf Virchow.

17.What is the composition of plasma membrane of human erythrocyte.

Ans. 52% proteins, 40% lipids.

18.Eukaryotic ribosome are 80S. What does 'S' stand for.

Ans. Sedimentation coefficient.

19.What is the function of cytoskeleton in a cell?

Ans. Mechanical support, motility, maintenance of shape of cell.

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CBSE Class 12 Biology

Important Questions

Chapter 8

Cell The Unit of Life

2 Marks Questions

1.Give two examples of gram positive bacteria?

Ans. Mycobacterium & clostridium tetani.

2.What is the significance of plasma membrane?

Ans. Significance of plasma Membrane:-

(i) It forms the outer boundary of cell thus giving cell a definite shape

(ii) It protects inner contents of the cell.

(iii) It forms a molecular boundary between cell & its environment.

3.Differentiate between gram positive and gram negative bacteria?

Ans.

GRAM-POSITIVE BACTERIA	**GRAM-NEGATIVE BACTERIA**
i) Their cell wall is only single layered & 100-200 A^0 thick.	i) Their cell wall consists of two layers & is 70-120 A^0 in thickness.
ii) They are stained by gram stain	ii) They are not stained by gram stain
iii) They do not have pilli.	iii) They have pilli
iv) Mesosomes present	iv.) Mesosomes absent

4.Why lysosomes are called "suicidal bags"?

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Ans. Lysosomes are sac-like structures bounded by a single membrane which contains several digestive enzymes. These enzymes when released from lysosomes bring about breaks down of various cytoplasmic structures. It helps in digestion of food particles, other foreign bodies, old worn out organelles of cell often resulting in death of cell hence are referred as suicidal bags of cell.

5.Explain the functions of centrosome?

Ans. Function of Centrosomes :-

(a) Centrioles form basal bodies.

(b) At the time of cell division, they organize spindle and form asters.

(c) They give rise to cilia and flagella.

(d) Out of the two centrioles, the distal centrioles of sperms forms the axial filament or axoneme of sperm tail.

6.What is meant by active transport across a cell membrane?

Ans. When molecules moves from a region of lower concentration to a region of higher concentration i.e. against concentration gradient, the process is known as active transport. The energy is required for the movement of molecules or ions in opposite direction. The enzyme responsible for the pumping of compounds into or out of cell believed to be a component of the membrane eg. Na^+- K^+ pump.

7.“Both lysosomes & vacuoles are endomembrane structures yet they differ in terms of their functions” comment.

Ans. Lysosomes & the vacuoles are endomembranous structures yet these differ in terms of their functions:-

(i) Lysosomes contains hydrolytic enzymes eg. lipase, protease which are able to digest lipids, proteins, nucleic acid & carbohydrate.

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(ii) Vacoules are membrane bound spaces which facilitates transport of many ions & other materials against the concentration gradient.

8.Who proposed cell theory? Give its postulates?

Ans. M. J. Scheilden & Theodore Schwann gave the famous cell theory which states as follows:-

(i) All living things are made of cells & cell products.

(ii) The cell is the structural & functional unit of all living organisms.

(iii) All metabolic reactions in the living things take place with in the cell

The cell theory was later modified by Rudolf Virchow who stated that “all new cells arise from the pre- existing cells”.

9.Which cell organelle is known as powerhouse of cell & why?

Ans. The double membrane mitochondria are actively associated with aerobic respiration & the release of energy for cellular activity. The biological oxidation of the fats & carbohydrates release much amount of energy which is utilized by mitochondria for ATP synthesis. When required energy is released form ATP molecules for various cell processes in cells so they are termed as “Power house of the cell”

10.What are the main functions of cell wall?

Ans. FUNCTIONS OF CELL WALL:-

(i) It provides a definite shape to the cell.

(ii) It protects inner contents of cells

(iii) It protects delicate plasma membrane present below it.

(iv) It allows transport of various substances to & from the cell.

(v) It prevents cell contents from drying up.

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11.State differences between SER & RER?

Ans.

SER	RER
i) SER do not have ribosomes & is composed of vesicles & tubules	i) RER have ribosomes on its outer surface & is composed of cisternal
ii) It synthesizes steroids & lipids eg. fat cell lipid secretory cells of liver	ii) Its main function is protein synthesis due to the presence of ribosomes.
iii) Gives rise to sphaerosomes	iii) Gives rise to Golgi bodes, vacuoles as well as lysosomes.
iv) Free of ribosomes.	iv) Bears ribosomes.

12.What are nuclear pores? State their functions?

Ans. Nuclear envelope contains two parallel membranes & the thickness is 10-50 nm. Outer membrane has small pores called the nuclear pores formed by fusion of two membranes. These pores are the passages through which movement of RNA & protein molecules occurs in both directions between nucleus & cytoplasm.

13.Give differences between cell wall & cell membrane?

Ans.

CELL WALL	CELL MEMBRANE
i) present in plant cell exclusively	i) present predominantly in animal cells
ii) Made up of cellulose	ii) Made up of proteins fats & water
iii) Thick & tough in nature	iii) Extremely thin & elastic in nature
iv) Thickening of various kinds present	iv) No thickenings
v) it is not selectively permeable	v) selectively permeable membrane

14.Which organelle is responsible for increasing the surface area of absorption in a cell? How?

Ans. The endoplasmic reticulum is responsible for increasing the surface area for

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absorption. It remains in the form of convulated tubule in the cytoplasm in the form of network. This provides more area for chemical reactions and increases the surface area of absorption.

15.What is mesosome in a prokaryotic cell? Mention the function that it performs?

Ans. Mesosome in a prokaryotic cell is formed by extensions of plasma membrane into the cell it may be in form of vesicle, tubule or lamella. They help in cell wall formation. They help in replication of DNA & distribution of it to daughter cells. They help in secretion respiration, & increase plasma membrane surface area.

16.“plasma membrane is described as” protein iceberg in sea of lipids”. why ?

Ans. The plasma membrane as described by singer & Nicolson is of fluid mosaic model type. The lipid & proteins are arranged in a mosaic fashion. The matrix is highly viscous fluid of two layers of phospholipids molecules having two types of globular proteins i) peripheral or extrinsic proteins & ii) integral or intrinsic proteins. The proteins present superficially or tightly with the membrane are enzymatic can move across the matrix & help in the active & passive transport of ions through the membrane.

17. What are nuclear pores ? State their function.

Ans. Minute pores present in the nuclear envelope; provide passage for movement of RNA and proteins between nucleus and cytoplasm.

18. Differentiate between the electron microscopic structure of cell/flagella and centriole.

Ans.

Flagella/Cilia	**Centriole**
i)Possess (9+2) pattern of axoneme microtubules enclosed by a membrance **ii) Each tubule is a doublet**	i) Possess (9+0) pattern, membrace less organelle ii) Each tubule is a triplet

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19. Give the specific terms for the following

(a)Cluster of ribosome's found in cytoplasm

(b)Extensive in folding to the inner membrane of mitochondria.

(c) Stacks of closely packed thylakoids

(d)Stalked particles on the inner membrane of mitochondria.

Ans. (a) Polyribosome/polysome

(b) Cristae

(c) Grana

(d) Fe F particles

20. (a) What is the function of inclusion bodies in prokaryotic cells?

(b)Where are they present?

(c) Give two examples of inclusion bodies.

Ans. (a) Reserve materials att stored.

(b) They alt free in the cytoplasm

(c) e. g., Phosphate granules, cyanophycean granules, glycogen granules.

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3 Marks Questions

1.Describe the ultrastructure of a cillium or flagellum?

Ans. Cilia & flagella have fundamentally the same structures. Each cilium or flagellum consists of eleven microtubules. These microtubules are arranged in two radii. Of these, nine are doublets. These are situated at the periphery & the remaining two are single microtubules situated in the centre. The microtubules are enclosed in a cytoplasmic matrix to form an axial filament. The outer tubules are 360 A^0 in diameter & are composed of two sub- units. The smaller of these have two arms in A- tubule & the smaller is B- tubule. These are found around the cylinder. The central microtubules are enclosed in a common sheath. From the centre arise nine secondary filaments. These are connected with tubules of the outer doublets.

2.Distinguish between prokaryotic & eukaryotic cell?

Ans.

PROKARYOTIC CELL	**EUKARYOTIC CELL**
i) It lacks well organized nucleus. The genetic material is present in the form of nucleoid.	i) Nucleus is well developed.
ii) DNA is in circular form & is not packed into chromosomes.	ii) Linear DNA packed into chromosomes
iii) Nuclear membrane is lacking	iii) Nuclear membrane is present.
iv) Mitochondria absent	iv) Mitochondria present.
v) Chloroplast absent	v) Chloroplast is present in plant cell only.

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vi) Membrane bound organelles are absent	vi) Membrane bound organelle are present.
vii) The ribosomes are of 70stype	vii).The ribosomes are of 80s type
viii) Cell wall consist of mucoptides	viii) Cell wall is absent in animal cells in plant cell, cell wall is made up of cellulose, hemicelluloses, lignin etc.
ix) Flagella are simple	ix) Flagella are specialized.

3.Explain the fluid mosaic model of plasma membrane.

Ans. The fluid mosaic model was proposed by G.Nicholson & s. singer. According to this each phospholipids layer is bimolecular & their hydrophilic ends are pointed towards top & bottom respectively.

In this, proteins are of two categories- peripheral (extrinsic) & integral (intrinsic). The integral proteins are tightly held in place by strong hydrophilic or hydrophobic interactions or both and are difficult to remove from the membranes. Two peripheral proteins are superficially arranged on either side membrane selectively permeable thus this model explains cell membrane is quasifluid & is made up of “protein icebergs in the sea of lipids”.

4.Describe the structure of a typical eukaryotic chloroplast.

Ans. Chloroplasts are bounded by two membranes, about 3000 A^0 in total thicknesses. Each membrane is 40-60 A^0 thick. The inner membrane is very intricately elaborated to form a system of lamellae. Internally the chloroplasts is divisible into two parts

(a) stroma- colourless, ground substance

(b) Membrane system- made of closed flattened sacs called thylakoids. These thylakoids are closely packed & appears as piles of coins. These structures are called Grana. The arrangement can be in the form of simple parallel sacs running lengthwise, or may be in a complex interconnecting network of the sacs. The chloroplasts invariably have some starch granules which often accumulate near a special region known as pyrenoid in algae

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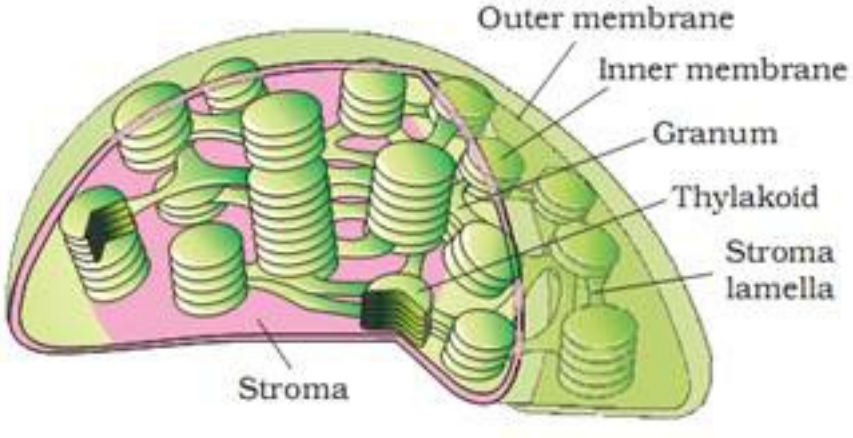

5.Mention three similarities & three differences between mitochondria & chloroplasts?

Ans. SIMILARITIES BETWEEN MITOCHONDRIA & CHLOROPLAST

(i) Mitochondria & chloroplasts are semi-automous organelle & they possess their own DNA, RNA as well as ribosomes.

(ii) They both develop & originate in the same way, formed by division of pre-existing organelle

(iii) Both of them contain circular DNA.

DIFFERENCES BETWEEN MITOCHONDRIA & CHLOROPLAST

(i) Mitochondria occurs in all eukaryotic cells while chloroplast are present only in plant cells.

(ii) Pigments are absent in mitochondria but always present in chloroplast.

(iii) The inner membrane of mitochondria are folded into cristae where as cristae are absent in chloroplast.

6.“multicellular organisms have better survival than their cellular counterpart” why?

Ans. In unicellular organisms, there is no division of labour. The single cell of the organism is capable of performing all the vital activities of life respiration, movement, digestion & reproduction etc. Respiration, nutrition & excretion generally occur through general body

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surface no special organs for these are present in them because they are too small to need them.

In multicellular organisms all the body cells do not perform all the vital activities of life rather these cells play more specialized role in life activities eg. some cells of the body perform the function of movement some perform the function of digestion or respiration or removal of wastes from the body some cells perform the function of transport. These cells would perform no other function except for which they are specialized. The group of similar cells performing similar function is termed as tissues.

7. Differentiate between a prokaryotic and eukaryotic cell.

Ans. The distinction between**prokaryotes**and**eukaryotes**is considered to be the most important distinction among groups of organisms. Eukaryotic cells contain membrane-bound organelles, such as the nucleus, while prokaryotic cells do not. Differences in cellular structure of prokaryotes and eukaryotes include the presence of mitochondria and chloroplasts, the cell wall, and the structure of chromosomal DNA .

Prokaryotes were the only form of life onEarthfor millions of years until more complicated eukaryotic cells came into being through the process of evolution.

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