

Episode No – 16
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Cell – biology

- * Electron microscope has revealed the presence of **or** which among the following can be seen only under electron microscope
(a) Ribosome (b) Chromosome
(c) Chloroplast (d) Leucoplast
Ans : A

- * Lignified cells are stained by
(a) Saffranine (b) Methyl blue
(c) Acetocarmine (d) Light green
Ans : A

- * Which of the following is the exception of cell theory?
(a) Bacteria (b) Fungi
(c) Lichen (d) Virus
Ans : D

- * Difference between the prokaryotic and eukaryotic cells in having
(a) Cell wall (b) Nuclear membrane
(c) Ribosome (d) None of these
Ans : B

- * The mitochondrial DNA differs from the nuclear DNA because of
(a) Being linear (b) Having A = T and C ≡ G
(c) Lacking binding histones (d) Being highly twisted
Ans : C

- * Mitochondria are the site for
(a) Photophosphorylation
(b) Oxidative phosphorylation
(c) Transpiration
(d) Carboxylation
Ans : B

- * Racker's particles are found in
(a) Chromosome (b) Mitochondria
(c) Nucleus (d) Golgi body
Ans : B

- * In endoplasmic reticulum the following processes take place
(a) Lipid synthesis
(b) Channeling of biosynthetic processes
(c) Steroid synthesis
(d) All of the above
Ans : D

* When the region of endoplasmic reticulum are studded by ribosome on their outer surface of the cisternae, it is called

- (a) Sarcoplasmic reticulum
- (b) Smooth endoplasmic reticulum
- (c) Granular endoplasmic reticulum
- (d) None of the above

Ans : C

* RER is mainly concerned with

- (a) Proteolysis
- (b) Fatty acids synthesis
- (c) Peptide bond formation
- (d) Cholesterol synthesis

Ans : C

* "Lysosomes" were discovered by

- (a) Haeckel
- (b) De Duve
- (c) De Vries
- (d) Purkinje

Ans : B

* The main function of lysosomes is

- (a) Digestion
- (b) Replication
- (c) Translation
- (d) Translocation

Ans : A

* What would happen if lysosomes get ruptured inside the cells in which they are present?

- (a) Cells will swell
- (b) Cells will shrink
- (c) Cells will die
- (d) Nothing would happen

Ans : C

* The sphaerosomes are rich in

- (a) Triglycerides and hydrolytic enzyme lipase
- (b) Oxidative enzymes
- (c) Nucleases
- (d) Proteases

Ans : A

* Which is not true about sphaerosomes?

- (a) Arise from ER.
- (b) Related to fat
- (c) Single membrane bound structure
- (d) Involved in photorespiration

Ans : D

* Tonoplast is a

- (a) Covering layer of golgi complex
- (b) Covering layer of vacuoles
- (c) Covering layer of microbodies
- (d) Non-living cytoplasmic content

Ans : B

* Which of the following plants contain centrioles in their cells?

- (a) Angiosperms (b) Moss and some fern
(c) Red alga (d) All of these

Ans : B

* Centrioles and centrosomes are present in cells of

- (a) Bacteria (b) Cyanobacteria
(c) Green plants (d) Animals

Ans : D

* Function of centriole is

- (a) Formation of spindle fibres
(b) Formation of nucleolus
(c) Initiation of cell division
(d) Formation of cell plate

Ans : A

* The "master mind" of the cell is

- (a) Protoplast (b) Nucleolus
(c) Nucleus (d) Plastid

Ans : C

* Histone proteins found in nuclei of eukaryotes are

- (a) Acidic (b) Basic
(c) Neutral (d) Amphoteric

Ans : B

* The nucleus has

- (a) One membrane with pores
(b) Two membranes with pores
(c) Two membranes with pores through which substances do not pass
(d) Two membranes with pores through which macromolecules may pass

Ans : D

* Nucleus is absent in

- (a) Sieve tubes (b) Companion cells
(c) Chlorenchyma (d) All the above

Ans : A

* In which kind of study is banding done

- (a) Creation of new species
(b) Production of disease resistant variety
(c) Mapping of chromosomes
(d) Artificial pollination

Ans : C

* L-shaped chromosomes are called

- (a) Sex chromosome (b) Acrocentric
(c) Telocentric (d) Sub-metacentric

Ans : D

* Kinetochore is present in

- (a) Mitochondria (b) Chromosomes
(c) Lysosomes (d) Sphaerosomes

Ans : B

* A chromosome having sub-terminal centromere is called

- (a) Telocentric (b) Acrocentric
(c) Metacentric (d) Sub-metacentric

Ans : B

* The beaded appearance of chromosome is known as

- (a) Centromere (b) Chromomere
(c) Centriole (d) Centrosphere

Ans : B

* Which of the following are used to define the karyotype of a species?

1. The number of chromosomes
2. The chromosome length
3. The positions of the centromeres

Code :

- (a) 1, 2 and 3 are correct
(b) Only 1 and 2 are correct
(c) Only 2 and 3 are correct
(d) Only 1 and 3 are correct

Ans : A

* Chromosomes always exist

- (a) In pairs
(b) In association with mitochondria
(c) Singly
(d) None of these

Ans : A

* Spindle fibres attach to chromosomes at their

- (a) Telomeres (b) Chromomeres
(c) Kinetochores (d) Centromeres

Ans : C

* Starch and cellulose are the compounds made up of many units of

- (a) Simple sugar (b) Fatty acid
(c) Glycerol (d) Amino acid

Ans : A

* Which one of the following is the sweetest sugar

- (a) Fructose (b) Glucose
(c) Galactose (d) Sucrose

Ans : A

- * Which of the following is the characteristic of plants?
(a) Glucose and cellulose (b) Pyruvic acid and glucose
(c) Cellulose and starch (d) Starch and pyruvic acid
Ans : C

- * Which of the following is a disaccharide?
(a) Ribose (b) Maltose
(c) Glucose (d) Cellulose
Ans : B

- * Pentose's and hexoses are the most common
(a) Disaccharides (b) Monosaccharides
(c) Oligosaccharides (d) Polysaccharides
Ans : B

- * Final product of starch digestion is
(a) Maltose (b) Sucrose
(c) Lactose (d) Glucose
Ans : D

- * Simplest form of carbohydrate is
(a) Carbon (b) Starch
(c) Monosaccharide (d) Canesugar
Ans : C

- * Glycoproteins contain
(a) Protein and fat
(b) Protein and salt
(c) Protein and vitamin
(d) Protein and carbohydrates
Ans : D

- * No cell could live without
(a) Phytochrome (b) Enzymes
(c) Chloroplasts (d) Protein
Ans : D

- * A ribose (but not deoxyribose) nucleotide is
(a) Cytosine — pentose sugar — phosphate
(b) Guanine — pentose sugar — phosphate
(c) Thymine — pentose sugar — phosphate
(d) Uracil — pentose sugar — phosphate
Ans : D

- * DNA is present in
(a) Nucleus only (b) Mitochondrion only
(c) Chloroplast only (d) All the above
Ans : D

- * Which one of the following pairs is not correctly matched?
- (a) Recombinant DNA DNA formed by the joining of segments of DNA from different sources
(b) Purine Nitrogenous bases Cytosine, thymine and uracil
(c) ATP The principal energy carrying compound in the cell

Ans : B

- * As there occurs more and more condensation of chromatin during cell division, there occurs
- (a) Increase in heterochromatin
(b) Increase in euchromatin
(c) Differentiation of heterochromatin and euchromatin decreases
(d) Differentiation of heterochromatin and euchromatin increases

Ans : B

- * Condensation of chromosomes occurs in
- (a) Prophase I (b) Prophase II
(c) Anaphase (d) Metaphase

Ans : A

- * The replication of nuclear DNA occurs in
- (a) G₁ phase (b) G₂ phase
(c) S phase (d) M phase

Ans : C

- * The role of meiosis
- (a) Formation of gametes (b) Bringing haplophase
(c) Bringing diplophase (d) Completing life cycle

Ans : B

- * Synapsis is pairing of
- (a) Any two chromosomes
(b) Non homologous chromosomes
(c) Acentric chromosomes
(d) Homologous chromosomes

Ans : D

- * For viewing diakinesis which one of the following would be a suitable material
- (a) Onion root tip (b) Leaf of Dichanthium
(c) Rat tail (d) Flower bud

Ans : D

- * Which is not the character of mitosis?
- (a) Leptotene (b) Zygotene
(c) Pachytene (d) All of the above

Ans : D

- * Repulsion of homologous chromosomes takes place in
- (a) Zygotene (b) Leptotene
(c) Diakinesis (d) Diplotene

Ans : C

- * Which cell division is found during cleavage
(a) Amitosis (b) Mitosis
(c) Closed mitosis (d) Meiosis
Ans : B
- * The second division in meiosis is called
(a) Equational division (b) Reduction division
(c) Multiplied division (d) None of the above
Ans : A
- * If there were 4 chromosomes present during prophase, how many chromosomes are there in each cell at the end of anaphase II
(a) 16 (b) 4
(c) 2 (d) 8
Ans : C
- * In which type of cell division spindle formation does not occur
(a) Mitosis (b) Meiosis
(c) Endomitosis (d) None of the above
Ans : C
- * A repeated cycle of DNA replication without separation of daughter chromatids leads to the formation of
(a) Pachytene chromosome (b) Leptotene chromosomes
(c) Polytene chromosome (d) Zygotene chromosomes
Ans : C
- * Chiasmata formation occurs during
(a) Diplotene (b) Leptotene
(c) Pachytene (d) Diakinesis
Ans : A
- * Homologous pairing in prophase I of meiosis I is called
(a) Synapsis (b) Linkage
(c) Cros
Ans : A

Assertion & Reason

For AIIMS Aspirants

Read the assertion and reason carefully to mark the correct option out of the options given below:

- (a) If both the assertion and the reason are true and the reason is a correct explanation of the assertion.
- (b) If both the assertion and reason are true but the reason is not a correct explanation of the assertion.
- (c) If the assertion is true but the reason is false.
- (d) If both the assertion and reason are false.
- (e) If the assertion is false but reason is true.

1. Assertion : Multicellular organisms have higher survival value than the unicellular organisms.
Reason : Dead cells are replaced by new cells in multicellular organisms.
2. Assertion : Larger cells are less efficient.
Reason : Surface volume ratio is more in large cells.
3. Assertion : Plasmodesmata occurs amongst animal cells.
Reason : Compartmentalisation helps the cells to maintain their identity.
4. Assertion : Sucrose is a reducing sugar.
Reason : All disaccharides are reducing sugar.
5. Assertion : Bacterial cell walls are not like the plant cell.
Reason : Bacterial cell wall is not made up of cellulose.
6. Assertion : Nucleoside is acidic in nature.
Reason : The bonds attaching second and third phosphates in higher nucleotide are high energy bonds.
7. Assertion : $Na^+ - K^+$ ATPase is an important membrane associated enzyme.
Reason : It helps in ion transfer across the membrane.
8. Assertion : Membrane transport occurs through the carrier proteins.
Reason : The transport carried by carrier proteins is passive.
9. Assertion : Cristae are the infoldings of outer membrane of mitochondria.
Reason : Electron transport occurs in mitochondrial matrix.
10. Assertion : Leucoplasts give rise to other types of plastids.
Reason : Chromoplasts do not get changed to other types of plastids.
11. Assertion : Thylakoids contain chlorophylls.
Reason : CO_2 fixation occurs in the matrix of chloroplast.
12. Assertion : Smooth endoplasmic reticulum is also called agranular endoplasmic reticulum.
Reason : SER contains ribophorins.
13. Assertion : ER acts as a circulatory system.
Reason : ER functions as cytoskeleton
14. Assertion : Karyokinesis occurs in M-phase
Reason : Cell division stops in M-phase
15. Assertion : Interphase is resting stage.
Reason : The interphase cell is metabolically inactive.
16. Assertion : DNA synthesis occurs in G_1 and G_2 periods of cell cycle.
Reason : During G_1 and G_2 phase the DNA contents become double.
17. Assertion : Mitosis maintains the genetic similarity of somatic cells.
Reason : Chromosomes do not undergo crossing over.
18. Assertion : Chiasmata is formed during diplotene.
Reason : Chiasmata are formed due to deposition of nucleoproteins.
19. Assertion : During zygotene, chromosomes show bivalent stage.
Reason : Bivalent is half the number of chromosomes.
20. Assertion : Eukaryotic cells have more DNA than prokaryotic cells.
Reason : Eukaryotes are genetically more complex than prokaryotes.
21. Assertion : Schleiden and Schwann were the first to observe the cells and to put forward cell theory.
Reason : The cells are always living unit.
22. Assertion : Cell membrane is semipermeable.

- Reason : The constituent molecules can freely move in the membrane.
- 23.** Assertion : Meiosis takes place in pollen mother cells.
Reason : Each pollen mother cell produces 4 haploid pollen grains.
- 24.** Assertion : Plasmids are double – stranded extra – chromosomal DNA.
Reason : Plasmids are possessed by eukaryotic cells.
- 25.** Assertion : Meiotic division results in the production of haploid cells.
Reason : Synapsis occurs during zygotene of meiosis.
- 26.** Assertion : Living organisms possess specific individuality with the definite shape and size.
Reason : Both living and non living entities resemble each other at the lower level of organisation.
- 27.** Assertion : Lysosomes help in photorespiration.
Reason : Lysosome have basic enzyme
- 28.** Assertion : Mitochondria is known as power house of cell.
Reason : ATP production takes place here.
- 29.** Assertion : DNA is associated with proteins.
Reason : DNA binds around histone proteins that form a pool and the entire structure is called a nucleosome.
- 30.** Assertion : Histones are basic proteins of major importance in packaging of eukaryotic DNA. DNA and histones comprise chromatine, forming the bulk of eukaryotic chromosome.
Reason : Histones are 5 major types H_1 , H_2A , H_2B , H_3 and H_4 .
- 31.** Assertion : Cell wall is not found in animal cell.
Reason : Animal cells are covered by cell membrane.
- 32.** Assertion : It is important that the organisms should have cell.
Reason : A cell keeps its chemical composition steady within its boundary.
- 33.** Assertion : The number of cells in a multicellular organism is inversely proportional to the size of body.
Reason : All the cells in the biological world are of same size.
- 34.** Assertion : A cell membrane shows fluid behaviour.
Reason : A membrane is a mosaic or composite of diverse lipids and proteins.
- 35.** Assertion : Mitochondria and chloroplasts are semiautonomous organelles.
Reason : They are formed by division of pre-existing organelles as well as contain DNA but lack protein synthesizing machinery

Answers

Assertion and Reason

1	b	2	c	3	e	4	d	5	a
6	a	7	a	8	c	9	d	10	b
11	b	12	c	13	b	14	d	15	c
16	d	17	a	18	c	19	b	20	a
21	d	22	b	23	a	24	c	25	a
26	b	27	d	28	a	29	a	30	b
31	a	32	a	33	d	34	a	35	c