

Sample Question Paper – Cell Biology

Questions with a single best answer only:

1. A wide association of membrane-like channels that widens throughout the cytoplasm and also responsible in synthesis of various secretory products and also has its role in intracellular storage and transport. Which intracellular structure is mentioned in this question?

- A. Golgi apparatus
- B. Cell membrane
- C. Centriole
- D. Endoplasmic reticulum

2. Function of mitochondria is:

- A. Generate chemical energy needed to power the cell's biochemical reactions which is stored in a small molecule called adenosine triphosphate (ATP).
- B. Generate electrical energy needed to power the cell's biochemical reactions which is stored in a small molecule called adenosine triphosphate (ATP).
- C. Generate mechanical energy needed to power the cell's biochemical reactions which is stored in a small molecule called adenosine triphosphate (ADP).
- D. Generate radiant energy needed to power the cell's biochemical reactions which is stored in a small molecule called adenosine triphosphate (ATP)

3. _____ is a structure that aids in maintenance of cell shape and internal organization thereby providing mechanical support to carry out essential functions like division and movement.

- A. Cell wall
- B. Cell membrane
- C. Cytoskeleton
- D. Cytoplasm

4. Individual actin molecules in microfilaments are generally called as:

- A. G- Actin
- B. F- Actin
- C. Both A and B
- D. None of the above

5. _____ are highly curved membranes that have an important role in signal transduction leading to immune responses.

- A. Golgi apparatus
- B. Microfilaments
- C. Microvilli
- D. Nucleosome

6. Three types of carbohydrates are:

- A. Starches, Sugars and Fibers
- B. Complex carbohydrates, Sugars and Fibers
- C. Both A and B are true
- D. Both A and B are false

7. Formation of Prostaglandin and its role in inflammation is aided by:

- A. Carbohydrates
- B. Lipids
- C. Proteins
- D. Nucleic acids

8. Different types of reactive oxygen species are:

- A. superoxide anion (O_2^-) and hydroxyl radical ($HO\bullet$)
- B. hydrogen peroxide (H_2O_2) and Singlet oxygen (1O_2)
- C. None of the above
- D. All of the above

9. Cytokines will never role its play in the growth of all blood cells and other related cells that help the body's immune and inflammation responses.

- A. True
- B. False

10. Which is known as the repository of genetic information?

- A. DNA
- B. RNA
- C. Both A and B
- D. None of the above

11. In general, DNA is self replicating while RNA can only be synthesized in transcription.

- A. True
- B. False

12. A cell cycle has different checkpoints namely:

- A. G1 checkpoint, G2 checkpoint, Meiosis checkpoint
- B. G0 checkpoint, G1 checkpoint, G2 checkpoint
- C. Cell growth checkpoint, DNA synthesis checkpoint, Mitosis checkpoint
- D. All of the above

13. One helical turn of DNA double helix measures:

- A. 3.4 mm
- B. 3.4 nm
- C. 34 mm
- D. 34 nm

14. Each diploid human cell contains two full sets of the human genome, with each copy consisting of approximately _____ nucleotides.

- A. 3.2 billion
- B. 3.2 million
- C. 3.2 trillion
- D. 3.2 quadrillion

15. Chromosome 1 is _____ long, and chromosome 21 is _____ Mbp long.

- A. 250 bp, 48 bp
- B. 48 bp, 250 bp
- C. 48 Mbp, 250 Mbp
- D. 250 Mbp, 48 Mbp

16. Chromatin loop contains approximately _____ of DNA.

- A. 100, 00, 00 bp
- B. 100,000 Mbp
- C. 100, 000 bp
- D. 100, 00, 00 Mbp

17. The release by the 'signalling' cells of signalling molecule are referred to as:

- A. Endogenous agonists
- B. First messengers
- C. Receptor molecules
- D. None of the above

18. Intracellular receptors are located in the cytoplasm of the cell and are activated by hydrophobic ligand molecules that can pass through the plasma membrane

- A. G-proteins
- B. Hydrophobic ligand
- C. Both A and B
- D. None of the above

19. Statement I. Phagocytosis is a type of endocytosis.
Statement II. Pinocytosis is a type of exocytosis.

- A. Statement 1 is true and statement 2 is false.
- B. Statement 1 is false and statement 2 is true.
- C. Both are true.
- D. Both are false.

20. Necrosis is another term for apoptosis.

- A. True
- B. False