

Question Bank

One Mark Question:

1. Define cell.
2. Define prokaryotic cell.
3. Define eukaryotic cell.
4. Define nucleoid.
5. Give any two features of Prokaryotic cell.
6. Give any two features of Eukaryotic cell.
7. What is exocytosis?
8. What endocytosis?
9. What is phagocytosis?
10. What is pinocytosis?
11. Give names of any two models of plasma membrane.
12. What is active transport?
13. What is passive transport?
14. Give any two features of Prokaryotic cell.
15. What is unit membrane?
16. Give peculiarities of unit membrane.
17. What is RER?
18. Give any two functions of E.R.
19. Give two functions of Golgi complex.
20. Write two functions of lysosomes.
21. Write two functions of mitochondrion.
22. What are F_1 particles?
23. Give short note on functions of Golgi complex.
24. Give short note on polymorphism in lysosome
25. Give short note on Endoplasmic reticulum.
26. Give short note on ultrastructure of mitochondrion.
27. Give short note on functions of mitochondrion.
28. Give short note on structure and functions of lysosomes.
29. Enlist functions of nucleolus.
30. What is nuclear pore complex?
31. What is nuclear matrix?
32. Define nucleoplasm.
33. What are microfilaments?
34. What are Intermediate filaments?
35. What are microtubules?
36. Give biochemical composition of microfilaments.
37. State biochemical composition of Intermediate filaments.
38. State biochemical composition of microtubules.
39. Give two functions of microfilaments.
40. State the functions of Intermediate filaments.
41. Mention any two functions of microtubules.
42. What is nuclear pore complex?
43. What is nuclear matrix?
44. What is cell cycle?
45. Define mitosis.
46. Define meiosis.
47. Mention any two salient features of G_2 phase of cell cycle.
48. Give significance of metaphase.
49. Give significance of pachytene.
50. Give significance of crossing over.
51. Write two special features of Diakinesis.

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| 52. Define cytokinesis. | 62. What is secondary cell culture? |
| 53. What is synapsis? | 63. Define cell line. |
| 54. Give functions of centriole. | 64. Give the examples of common cell lines. |
| 55. Define checkpoint. | 65. Give any two applications of animal cell culture. |
| 56. What is cellular aging? | 66. What are stem cells? |
| 57. Define Necrosis. | 67. Define Immunology. |
| 58. What are free radicals? | 68. Define Immunity. |
| 59. Mention effects of free radicals on cell. | 69. What is antigen? |
| 60. What is animal cell culture? | 70. What is antibody? |
| 61. What is primary cell culture? | |

Short Answer Questions:

1. Describe generalised structure of prokaryotic cell.
2. Describe generalised structure of eukaryotic cell.
3. Distinguish between prokaryotic cell and eukaryotic cell.
4. Distinguish between plant cell and animal cell.
5. Describe functions of plasma membrane.
6. Describe Danieli-Davson model of plasma membrane.
7. Explain fluid mosaic model of plasma membrane.
8. Describe membrane receptors.
9. Describe structure and function of Endoplasmic reticulum.
10. Enlists the functions of Endoplasmic reticulum.
11. Describe structure and function of Golgi complex.
12. Enlists the functions of Golgi complex.
13. Describe structure and function of Mitochondrion.
14. Enlists the functions of Mitochondrion.
15. Explain polymorphism in Lysosomes.
16. Describe ultrastructure of nuclear membrane.
17. Describe ultrastructure of nucleus.
18. State chemical composition and functions of nucleolus.
19. Describe nucleocytoplasmic interactions.
20. What is cytoskeleton? Enlist types and mention their functions.
21. Describe ultrastructure of nucleus.
22. State chemical composition and functions of nucleolus.
23. Describe nucleocytoplasmic interactions.
24. Describe various phases of cell cycle.
25. Describe the process of mitosis with suitable diagram.
26. Describe cellular aging.
27. Describe potency of stem cells with examples.

28. Describe different sources of stem cells.
29. Describe structure of antibody.
30. Give comparative account of different immunoglobulin types.
31. Describe different types of antigens and give its functions.

Short note:

1. Give short note on scope of cell biology.
2. Give short note on Active transport.
3. Give short note on passive transport.
4. Sketch and label Mitochondrion.
5. Sketch and label Golgi complex.
6. Give short note on functions of Golgi complex.
7. Give short note on polymorphism in lysosome
8. Give short note on Endoplasmic reticulum.
9. Give short note on ultrastructure of mitochondrion.
10. Give short note on functions of mitochondrion.
11. Give short note on structure and functions of lysosomes.
12. Give short note on nuclear pore complex.
13. Give short note on nucleocytoplasmic interactions.
14. Give short note on Composition & function of Nucleolus.
15. Give short note on nuclear lamin proteins.
16. Give short note on biochemical composition and functions of microfilaments.
17. Give short note on biochemical composition and functions of Intermediate filaments.
18. Give short note on biochemical composition and functions of microtubules.
19. Give short note on significance of mitosis.
20. Give short note on significance of meiosis.
21. Write short note on checkpoints in cell cycle.
22. Give short note on CDK.
23. Write short note on intra and extra cellular changes occurs during cellular aging.
24. Write short note on Apoptosis.
25. Write short note on Necrosis.
26. Write short note on applications of animal cell culture.
27. Write short note on stem cell therapy.
28. Give short note on historical perspectives of immunology.
29. Give short note on innate immunity.
30. Give short note on acquired immunity.
31. Give short note on Vaccination regime in India.

Sketch and label:

1. Sketch and label prokaryotic cell.
2. Sketch and label eukaryotic cell.
3. Sketch and label plant cell.
4. Sketch and label animal cell.
5. Sketch and label ultrastructure of Mitochondrion.
6. Sketch and label ultrastructure of Nucleus.
7. Sketch and label Golgi complex.
8. Sketch and label nuclear pore complex.
9. Sketch and label structure of antibody.

Long Answer Questions:

1. What is cell? Describe prokaryotic and eukaryotic cell with suitable diagram.
2. Explain the fluid mosaic model of plasma membrane with a suitable diagram.
3. Describe the ultrastructure and functions of Lysosome & Golgi complex.
4. Describe the ultrastructure and functions of Endoplasmic reticulum and Mitochondrion.
5. Describe ultrastructure of pore complex. Add a note on nucleocytoplasmic interactions.
6. Explain in detail structure and function of nucleus.
7. What is cell cycle? Describe mitotic cell division.
8. Define cell division? Describe meiotic cell division.
9. Describe prophase-I of meiotic cell division. Add note on significance of meiotic cell division.
10. Describe mitotic cell division. Add note on role of centriole in the cell division.
11. What is cellular aging? Describe intra and extra cellular changes occur during cellular aging.
12. What is animal cell culture? Describe its process in brief and give its applications.
13. Describe structure of antibody. Add a note on different types of antibodies.

MCQs:

- Which of the following feature is common to prokaryotes and many eukaryotes?
 - Chromatin material present.
 - Cell wall present.
 - Nuclear membrane present.
 - Membrane- bound subcellular organelles are present.
- Prokaryotic cells are generallyand multipliesthan the eukaryotic cells.
 - Smaller, slower.
 - Larger, slower.
 - Smaller, faster.
 - Larger, faster.
- If you remove the fimbriae from bacterial cell, which of the following would you expect to happen?
 - The bacteria could no longer swim.
 - The bacteria would not adhere to the host.
 - Transportation of molecules across the membrane would stop.
 - The shape of bacteria would change.
- The lipids are arranged within the membrane with
 - Polar heads toward the inner side and the hydrophobic tails towards the outer side.
 - Both heads and tails toward outer side.
 - Head towards outer side and tail towards inner side.
 - Both heads and tails toward inner side.
- The fluid mosaic model explains which aspects of a cell membrane?
 - Only structural aspects.
 - Only functional aspects.
 - Both structural and functional aspects.
 - Only fluidity of membrane.
- Choose the incorrect statement regarding the plasma membrane.
 - Ratio of proteins and lipids varies considerably in different cell types.
 - 52% proteins and 40% lipids constitute the membrane of human RBC.
 - Arrangement of proteins (P) and lipids (L) is L-P-P-L.
 - Head of lipid is hydrophilic.

7.is directly connected to the outer nuclear membrane.
- Mitochondria.
 - Golgi complex.
 - Endoplasmic reticulum.
 - Chloroplast.
8. Which of the following represents the feature of lysosomes?
- A lower pH than the cytoplasm.
 - Reduced hydrolase activity.
 - Double membrane envelope.
 - Membrane less organelle.
9. Which of the following statement is incorrect?
- Mitochondria, unless specifically stained are not easily visible under the microscope.
 - Physiological activity of cells determines the number of mitochondria per cell.
 - Mitochondrion, a power house of cell has DNA, RNA, ribosomes and enzymes, so it can survive outside the cell.
 - Mitochondria divide by fission.
10. The most likely method, used to determine the ultrastructure of a cell organelle is
- Autoradiography.
 - Microdissection.
 - Electron microscopy.
 - Phase contrast microscopy.
11. The transport factors that help in the transport of molecules through the nuclear pores are known as
- Nucleopherins.
 - Nucleoporins.
 - Karyopherins.
 - Karyoporins.
12. Nuclear Organizer Regions (NOR) is found in.....
- Nuclear matrix.
 - Nucleolus.
 - Nuclear lamina.
 - Nucleoporins.

13. Microfilaments are composed of globular subunits of
- Myosin.
 - Kinesin.
 - Actin.
 - Colchicine.
14. The type V intermediate filaments are called
- Lamins.
 - Collagen.
 - Lignin.
 - Fibrin.
15. Which of the following is not a function of cytoskeleton in a cell?
- Intracellular transport.
 - Maintenance of cell shape and structure.
 - Support of the organelles.
 - Inhibits vacuole formation.
16. Meiosis in diploid organism results in
- Production of gametes.
 - Increase in the number of chromosomes.
 - Production of somatic cells.
 - Reduction on variation.
17. One cycle of cell division in human cell takes 24 hours. Which phase occupies the maximum part of cell cycle?
- Mitotic phase.
 - Meiotic phase.
 - Interphase.
 - Cytokinesis.
18. is characterized by all the chromosomes coming to lie at the equator, with one chromatid connected by its kinetochore to spindle fibres from one pole and its sister chromatids connected by its kinetochore to spindle fibres from opposite pole.
- Prophase.
 - Metaphase.
 - Anaphase.
 - Telophase.

19. The regulatory subunit of maturation-promoting factor (MPF) is called
- Kinase.
 - Cyclin.
 - Tetracyclin.
 - Interleukin.
20. Which of the following statement is incorrect?
- The term apoptosis was coined in the year 1972 by John Kerr, Andrew Wyllie, and A. R. Currie of the University of Aberdeen, Scotland.
 - Necrosis is programmed cell death.
 - T-lymphocytes recognize and kill the abnormal, pathogen infected cells.
 - Cytokines serve as external stimuli for apoptosis.
21. In the secondary culture, cells are obtained from
- Primary culture.
 - The organism.
 - Organ culture.
 - Phenotypic culture.
22. The differentiation potential of stem cells known as
- Stochastic differentiation.
 - Potency.
 - Asymmetric differentiation.
 - Self-renewal.
- 23..... is obtained during a lifetime.
- Acquired immunity.
 - Active immunity.
 - Passive immunity.
 - None of the above.
24. Which of the following statements is true about the IgM of humans?
- IgM is produced by high-affinity plasma cells.
 - IgM can cross the placenta.
 - IgM can protect the mucosal surface.
 - IgM is primarily restricted in the circulation.
25. Which of the following statements is incorrect?
- IgM is the most effective antibody.
 - The interactions between antigen-antibody are of weak hydrogen bonds and Van der Waal's forces.
 - All immunogens are proteins and all proteins are immunogens.
 - Epitope is a small group of chemicals present on the antigen that reacts with antibody.