

**ANEKANT EDUCATION SOCIETY'S
TULJARAM CHATURCHAND COLLEGE OF ARTS, SCIENCE AND COMMERCE
AUTONOMOUS INSTITUTE**

QUESTION BANK

Class: F.Y.B.Sc. (Semester – I)

Paper Code: ZOO: 1102

Paper: II- Fundamentals of Cell Biology Credit: 2

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LONG ANSWER QUESTIONS

NOTE: DRAW NEAT LABELED DIAGRAM WHEREVER NECESSARY

1. Describe the ultrastructure of prokaryotic cell.
2. Describe ultrastructure of nucleus.
3. Explain the structure of plasma membrane with the help of Fluid mosaic model.
4. Give the structure and functions of mitochondria.
5. Give the structure and functions of chloroplast.
6. Explain the mitosis in detail.
7. Explain the meiosis in detail.
8. What is cell cycle? Describe it in detail.
9. Describe the structure of lysosomes and peroxisomes. Add a note on their functions.
10. With the help of structural details, give similarities and differences between chloroplast and mitochondria.
11. Describe ultrastructure of Golgi complex. Add a note on its functions.
12. Describe structure of rough endoplasmic reticulum. Give its functions.
13. Describe structure and functions of lysosomes and glyoxysomes.
14. Justify the statement 'Plasma membrane is a quasifluid structure' with the help of structural properties.
15. Explain the structure of a typical plant cell with the help of a suitable diagram.
16. Explain the structure of a typical animal cell with the help of a suitable diagram.
17. Explain the structure of a typical fungal cell with the help of a suitable diagram.
18. Explain the cellular organization of typical liver cell / *Paramecium* / Amoeba.
19. Explain the cellular organization of *Salmonella typhimurium*.
20. Explain the cellular organization of *Saccharomyces cerevisiae* / any typical fungal cell.
21. Describe mitosis in detail with suitable diagrams and give its significance.
22. Describe meiosis-I in detail with suitable diagrams and give its significance.
23. What is cell cycle? Explain it in brief with suitable diagram.
24. Explain prophase-I with the help of suitable diagrams.
25. Explain the meiosis in detail and give its significance.

SHORT ANSWER QUESTIONS

NOTE: DRAW NEAT LABELED DIAGRAM WHEREVER NECESSARY

1. Distinguish between prokaryotic and eukaryotic cell.
2. Distinguish between plant cell and animal cell.
3. Distinguish between nucleoid and nucleus.
4. Explain the structure of mitochondria in brief.
5. Explain in brief the structure of organelle that brings about photosynthesis.
6. Explain in brief the structure of cell organelle that carries out reactions of Krebs cycle.
7. Differentiate between chloroplast and mitochondria.
8. Why are chloroplast and mitochondria called as semiautonomous cell organelles?
9. Explain the structure of cell organelle that forms acrosome of the sperm.
10. Explain the structure of prokaryotic ribosomes / eukaryotic ribosomes.
11. Explain in brief various plastids.
12. Give functions of rough endoplasmic reticulum / smooth endoplasmic reticulum.
13. Give the functions of mitochondria / Golgi complex.
14. Explain the structure of cilium / flagellum.
15. Explain the structure of prokaryotic flagellum.
16. Sketch and label: Ultrastructure of eukaryotic cell / prokaryotic cell / nucleus / mitochondria / chloroplast / Golgi complex.
17. Why is meiosis-I called as reductional division? What would have happened if there had not been meiotic division?
18. Give the significance of mitosis / meiosis.
19. Give the postulates of cell theory.
20. Distinguish between mitosis and meiosis.
21. Sketch the sequential events of the type of cell division occurring in red bone marrow.
22. Explain various plastids in brief.
23. Explain the concept of unit membrane.
24. Distinguish between centrosome and centriole.
25. Explain the principle of chromatography / electrophoresis.
26. Explain the fluid mosaic model of plasma membrane.
27. Explain the principle of camera lucida.

SHORT NOTES and SCIENTIFIC REASONS

1. Write a note of lysosomes.
2. Write a note on peroxisomes.
3. Write a note on centriole.
4. Write a note on smooth endoplasmic reticulum.
5. Write a note on nuclear pore complex.
6. Write a note on crossing-over.
7. Write a note on micrometer.

8. Write a note on camera lucida.
9. Write a note on phase contrast microscope.
10. Write a note on interphase.
11. Write a note on nuclear pore complex.
12. Write a note on cytoplasm.
13. Write a note on Glyoxysome.
14. Write a note on metaphase of meiosis-I.
15. Write a note on centrifugation.
16. Write a note on chromatin material of eukaryotic cells.
17. Write a note on nucleolus.
18. Write a note on vacuoles.
19. Write a note on protein synthesizing machinery of the cell.
20. Why does nuclear membrane have nuclear pores?
21. Why is plasma membrane called as quasifluid?
22. Why are lysosomes called as suicidal bags?
23. Why is nucleus called as control center of the cell?
24. Why is plasma membrane called as semi-permeable?
25. Why is it said that plasma membrane is responsible for cellular homeostasis?

DEFINE / EXPLAIN

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|-----------------------------|---------------------------|
| 1. Chromatin. | 19. Cell wall |
| 2. Euchromatin | 20. Fimbriae |
| 3. Heterochromatin. | 21. Chromoplast. |
| 4. Phagocytosis. | 22. Leucoplast. |
| 5. Pinocytosis. | 23. Rf-value. |
| 6. Tubulin. | 24. Pore complex. |
| 7. Endocytosis. | 25. rDNA. |
| 8. Exocytosis. | 26. Autophagosomes. |
| 9. Cyclosis. | 27. Anaphase |
| 10. Microfilaments. | 28. Cytokinesis |
| 11. Intermediate filaments. | 29. Karyokinesis |
| 12. Microtubules. | 30. Chiasmata. |
| 13. Tonoplast. | 31. Synaptonemal complex. |
| 14. Oxysomes. | 32. Porin. |
| 15. Cristae. | 33. S-phase. |
| 16. Nucleoid | 34. Pachytene |
| 17. F-1 particle | 35. Zygotene. |
| 18. Plasmid | |

MCQs

1. Which part of the endomembrane system is involved in protein synthesis?
Ⓐ RER Ⓑ SER Ⓒ Golgi body Ⓓ Lysosome
2. Which of the following is same in mitochondria and chloroplasts?
Ⓐ Chromosome. Ⓑ Ribosome.
Ⓒ All electron carriers. Ⓓ Pigment.
3. Synthesis of rRNA occurs in
Ⓐ Nucleus. Ⓑ Nucleolus. Ⓒ Nuclear pore. Ⓓ Nuclear lamina.
4. Subunits of 70S type of ribosomes are
Ⓐ 60S & 30S Ⓑ 40S & 30S Ⓒ 50S & 30S Ⓓ 60S & 40S
5. Cell wall of plant consists of
Ⓐ lignin, pectin, chitin, cellulose.
Ⓑ cellulose, hemicelluloses, protein, lignin.
Ⓒ cellulose, hemicelluloses, pectin, lignin.
Ⓓ lignin, chitin, protein, murein.
6. Which of the following is not a eukaryote?
Ⓐ *Euglena*. Ⓑ *Paramecium caudatum*.
Ⓒ *Lactobacillus* Ⓓ *Saccharomyces cerevisiae*.
7. Oxysomes are present in
Ⓐ Lysosomes. Ⓑ Phagosomes. Ⓒ Chloroplasts. Ⓓ Mitochondria.
8. Oxidative phosphorylation occurs in
Ⓐ thylakoids. Ⓑ mitochondria. Ⓒ nucleus. Ⓓ nucleoid.
9. Polysomes are
Ⓐ types of chromosomes. Ⓑ group of lysosomes.
Ⓒ many ribosomes assembled on mRNA. Ⓓ group of chromosomes.
10. Cyanobacteria do not have
Ⓐ 80S type of ribosomes. Ⓑ nucleoid.
Ⓒ photosynthetic pigments. Ⓓ circular chromosome.
11. What is the total number of chromosomes in the nucleus of a human somatic cell?
Ⓐ 22 Ⓑ 23 Ⓒ 44 Ⓓ 46
12. You are observing mitosis in human somatic cell. One of the cells is in anaphase. What will be the total number of DNA molecules in that cell?
Ⓐ 23 Ⓑ 44 Ⓒ 46 Ⓓ 92

13. Rod-shaped bacterial cells are called as
 (A) cocci (B) bacilli (C) spirilla (D) vibrios
14. Which of the following may be absent in cell wall of prokaryotic cell?
 (A) Protein (B) Lipid (C) Cellulose (D) Polysaccharide
15. Additional gummy, mucilaginous covering present around some bacterial cells is called as
 (A) capsule. (B) mould. (C) protoplasm. (D) cell membrane.
16. Chitinous cell wall is present around the
 (A) all prokaryotic cells. (B) all eukaryotic cells.
 (C) fungal cells. (D) cyanobacteria.
17. Extrachromosomal genetic material of prokaryotic cells is
 (A) mesosome. (B) episome. (C) polysome. (D) acrosome.
18. Primary lysosomes that are able to digest intracellular organelles are called
 (A) heterophagosomes. (B) autophagosomes.
 (C) autosomes. (D) mesosomes.
19. Which of the following cells organelles are present in only plant cells?
 (A) Peroxisomes and glyoxysomes. (B) Mitochondria and chloroplasts.
 (C) Chloroplasts and Golgi bodies. (D) Glyoxysomes and chloroplasts.
20. Genetically active form of chromatin is
 (A) facultative heterochromatin (B) constitutive heterochromatin
 (C) euchromatin (D) heterochromatin
21. Which of the following is not correct?
 (A) $1 \text{ nm} = 10^3 \text{ mm}$ (B) $1 \text{ nm} = 10^6 \text{ mm}$ (C) $1 \text{ nm} = 10^3 \mu\text{m}$ (D) $1 \text{ nm} = 1000 \mu\text{m}$
22. Lens of microscope near to the eye of observer is called
 (A) ocular. (B) objective. (C) condenser. (D) diaphragm.
23. Separation technique based upon principle of migration of charged ions in an electric field is
 (A) chromatography (B) electrophoresis
 (C) micrometry (D) centrifugation
24. Which of the following is not a technique of separation or purification?
 (A) chromatography (B) electrophoresis
 (C) micrometry (D) centrifugation
25. RuBISCO is present in
 (A) mitochondria (B) chloroplast (C) Golgi body (D) lysosome