

**Yashwantrao Chavan College of Science, Karad.**

**B.Sc. Part I Semester –I**

**Paper- III (Cell Biology and Evolutionary Biology)**

**Question Bank**

**Multiple choice questions**

- 1) What is the basic unit of life?  
a) Tissue b) Organ c) Cell d) Organism
- 2) Who is credited the development of the cell theory?  
a) Charles Darwin b) Gregor Mendel c) Robert Hooke d) Albert Einstein
- 3) The prebiotic earth in the beginning was \_\_\_\_\_  
a) Marshy b) Rocky c) Sandy d) Gaseous
- 4) In the reducing atmosphere of earth, which gas was absent?  
a) Nitrogen b) Hydrogen c) Oxygen d) Ammonia
- 5) Prokaryotic cells lack which of the following structures?  
a) Nucleus b) Cell membrane  
c) Cytoplasm d) Ribosomes
- 6) Which organelle is responsible for the production of ATP in eukaryotic cells?  
a) Nucleus b) Mitochondria  
c) Golgi apparatus d) Lysosome
- 7) Chloroplasts are found in which type of cells?  
a) Animal cells b) Bacterial cells  
c) Plant cells d) Fungal cells
- 8) In igneous rocks generally which one of the following is not found?  
a) Uranium b) Strontium c) Potassium d) Radioactive carbon
- 9) The term „ great dying „ is used for \_\_\_\_\_  
a) K-T extinction b) Devonian extinction  
c) Extinction of dinosaurs d) Permian – Triassic extinction

- 10) Deccan trap formation is supposed to be due to \_\_\_\_\_  
a) Earthquakes b) Storms c) Tsunamis d) Flood basalt lava
- 11) In \_\_\_\_\_ polytene chromosome is 1000 times larger than the somatic chromosome.  
a) Drosophila b) Grasshopper c) House fly d) Beetle
- 12) The fluid mosaic model of plasma membrane was proposed by \_\_\_\_\_  
a) S. J. Singer and G. L. Nicolson b) Robert Hook c) Cook d) Darwin
- 13) The \_\_\_\_\_ are called “The Power House” of cells.  
a) Lysosomes b) Ribosomes c) Golgi complex d) Mitochondria
- 14) What is the primary function of the Golgi apparatus?  
a) Protein synthesis  
b) Lipid metabolism  
c) Protein processing and packaging  
d) Energy production
- 14) Which organelle contains enzymes for intracellular digestion?  
a) Mitochondria  
b) Lysosome  
c) Endoplasmic reticulum  
d) Nucleus
- 15) Fossilized foot prints are the type of \_\_\_\_\_  
a) Moulds b) Petrification c) Casts d) Ichnofossils
- 16) The dinosaurs ruled the earth during \_\_\_\_\_ period  
a) Jurassic b) Devonian c) Cambrian d) Permian
- 17) Each chromosome consists of two symmetrical spirally coiled and filamentous structure called as \_\_\_\_\_  
a) Chromatids b) Chromomeres c) Genes d) Centromeres
- 18) Rough endoplasmic reticulum is involved in the synthesis of what type of molecules?  
a) Carbohydrates  
b) Proteins  
c) Lipids  
d) Nucleic acids
- 19) Which organelle is responsible for detoxifying harmful substances in the cell?  
a) Mitochondria  
b) Nucleus  
c) Peroxisome  
d) Lysosome

- 20) The fluid mosaic model of plasma membrane was proposed by \_\_\_\_\_  
a) S. J. Singer and G. L. Nicolson b) Robert Hook  
c) Cook d) Darwin
- 21) \_\_\_\_\_ play a role in the formation of acrosome during spermatogenesis.  
a) Golgi complex b) Nucleolus c) Endoplasmic reticulum d) Mitochondria
- 22) In the reducing atmosphere of earth, which gas was absent?  
a) Nitrogen b) Hydrogen c) Oxygen d) Ammonia
- 23) Which process describes the uptake of solid particles by a cell?  
a) Pinocytosis  
b) Phagocytosis  
c) Exocytosis  
d) Receptor-mediated endocytosis
- 24) The sodium-potassium pump helps maintain the resting membrane potential by actively transporting which ions?  
a) Sodium ions out and potassium ions in  
b) Sodium ions in and potassium ions out  
c) Calcium ions in and chloride ions out  
d) Potassium ions out and sodium ions in
- 25) The term ‘ great dying ‘ is used for \_\_\_\_\_  
a) K-T extinction      b) Devonian extinction  
c) Extinction of dinosaurs d) Permian – Triassic extinction
- 26) Deccan trap formation is supposed to be due to \_\_\_\_\_  
a) Earthquakes b) Stroms c) Tsunamies d) Flood basalt lava
- 27) Asteroid impact theory for K-T mass extinction is put forward by \_\_\_\_\_  
a) Darwin b) Mendel c) Alvarez d) Wegener
- 28) Which of the following is an example of passive transport?  
a) Active transport  
b) Diffusion  
c) Endocytosis  
d) Pinocytosis
- 29) What are the main components of the cytoskeleton?  
a) Nucleus, endoplasmic reticulum, and ribosomes  
b) Microtubules, microfilaments, and intermediate filaments

- c) Peroxisomes, lysosomes, and vacuoles
  - d) Golgi apparatus, mitochondria, and chloroplasts
- 30) The \_\_\_\_\_ was formulated in 1839 by two German Scientists, Schleiden and Schwann.
- a) Cell theory                      b) Theory of evolution
  - c) Theory of evolution of life d) Theory of origin of life
- 31) \_\_\_\_\_ are the basic structural and functional units or building blocks of all living organisms.
- a) Bones b) Tissues c) Cell d) Organs
- 32) Ultrastructure studies reveal that the nuclear membrane is made of \_\_\_\_\_ membranes.
- a) One b) Two c) Three d) Four
- 33) \_\_\_\_\_ is this membrane bound cell organelle, having the genetic material and various proteins.
- a) Lysosome b) Nucleolus c) Nucleus d) Ribosomes
- 34) The \_\_\_\_\_ is the heart of the cell.
- a) Mitochondria b) Golgi complex c) Nucleus d) ribosomes
- 35) What is the purpose of the nuclear envelope?
- a) Regulating intracellular transport                      b) Protecting the nucleus
  - c) Synthesizing ribosomes                                      d) Facilitating cell division
- 36) Chromatin is composed of DNA and what other molecule?
- a) RNA                      b) Lipids                      c) Protein                      d) Carbohydrates
- 37) What is the role of ribosomes in a cell?
- a) Producing energy                      b) Synthesizing proteins
  - c) Storing genetic information                      d) Facilitating cell division
- 38) \_\_\_\_\_ are „V“ shaped chromosomes having two nearly equal arms.
- a) Submetacentric b) Metacentric c) Acrocentric d) Telocentric
- 39) The nucleus was first detected by \_\_\_\_\_ in 1700 as refractile bodies.
- a) Leeuwenhoek b) Darwin c) Mendel d) Brus

- 40) Archaeopteryx is connecting link between \_\_\_\_\_  
a) Mammals and reptile b) Reptile and Aves  
c) Pisces and Aves d) Mammals and Aves
- 41) Which of the following organelle is called the perinuclear dense bodies?  
a) Nucleolus b) Lysosomes c) Peroxisome d) All of the above
- 42) If male donkey and Female Horse crossed will be form \_\_\_\_\_  
a) Henny b) Tigon c) Mule d) None of these
- 43) Uranium ( $^{238}\text{U}$ ) decays into \_\_\_\_\_  
a) Lead ( $^{206}\text{Pb}$ )      b) Argon ( $^{40}\text{Ar}$ )  
c) Pottasium ( $^{40}\text{K}$ )      d) None of these
- 44) \_\_\_\_\_ helps in removal of dead cells in tissue  
a) Golgi complex b) Lysosome c) Plasma membrane d) Nucleolus
- 45) In which cellular organelle does cellular respiration occur, producing ATP?  
a) Nucleus b) Chloroplast c) Mitochondria d) Golgi apparatus
- 46) Which of the following organelles is responsible for photosynthesis in plant cells?  
a) Nucleus b) Chloroplast c) Peroxisome d) Mitochondria
- 47) What is the primary function of the endoplasmic reticulum?  
a) DNA replication b) Lipid synthesis c) Protein synthesis d) Waste disposal
- 48) What is the function of lysosomes in a cell?  
a) Intracellular digestion b) Energy production  
c) Protein synthesis d) Nucleic acid synthesis
- 49) Which part of the endomembrane system modifies and packages proteins for transport?  
a) Nucleus    b) Endoplasmic reticulum    c) Golgi apparatus    d) Peroxisome
- 50) Autophagy is a process in which cells do what?  
a) Divide    b) Digest themselves      c) Replicate DNA    d) Produce ATP
- 51) Which of the following is not a component of the cytoskeleton?  
a) Microtubules b) Microfilaments  
c) Endoplasmic reticulum d) Intermediate filaments

52) Which organelle is responsible for cellular movement and transport of materials?

- a) Endoplasmic reticulum b) Mitochondria c) Golgi apparatus d) Cytoskeleton

## Long answer questions

1. What is a cell structure and function?
2. What is evolution? Explain detail theory of chemical evolution:
3. Describe the Oparin-Haldane theory of chemical evolution.
4. Describe Miller- Urey experiment?
5. Describe detail the theory of natural selection. ?
6. Describe the cell theory and its significance in biology.
7. Describe the Concept of Species?
8. Describe De Vries theory of organic evolution?
9. Describe different types of fossils.
10. What do you mean by dating of fossil? Write in brief the carbon dating method?
11. What are the differences between prokaryotic and eukaryotic cells?
12. Explain the structure and function of the plasma membrane.
13. What is evolution? Explain detail theory of chemical evolution:
14. Describe the Oparin-Haldane theory of chemical evolution.
15. Describe Miller- Urey experiment?
16. Describe detail the theory of natural selection. ?
17. What is the role of the nucleus in a eukaryotic cell?
18. Give an account of Ultrastructure of Nucleus add note on nuclear pore complex
19. Give account of polytene chromosome
20. Give an Account on Nucleosome and add note on solenoid model

21. Describe ultrastructure of Lysosome
22. Discuss the function of the nucleolus.
23. What are mitochondria and how do they produce ATP?
24. What is the function of the Golgi apparatus?
25. Explain the function of lysosomes in a cell.
26. Describe Golgi complex in detail
27. Describe Fluid mosaic model of Plasma membrane?
28. Give an account on functions of the endoplasmic reticulum
29. What are the differences between smooth and rough endoplasmic reticulum?
30. Describe the structure and function of the endoplasmic reticulum.
31. Describe the structure of the nucleus and its main components. What is the primary function of the nucleus in a eukaryotic cell?
32. Describe asteroid impact theory for mass extinctions?
33. What do you mean by Decean Trap? How it related to K.T extinction?
34. Describe Lamarck's theory of Organic evolution types of fossil.
35. Differentiate between the rough endoplasmic reticulum (RER) and the smooth endoplasmic reticulum (SER).

### **Short answer questions**

1. Define cell biology.
2. Gene Migration
3. Structure of Nucleosome
4. Plasma membrane
5. Ultrastructure of Lysosome
6. Function of Lysosome
7. What is the cell theory?
8. Name two scientists who contributed to the development of the cell theory.
9. Differentiate between prokaryotic and eukaryotic cells.

10. Bottle Neck phenomenon
11. Struggle for existence
12. Industrial melanization
13. Major Steps in chemical evolution
  
14. What is the plasma membrane, and what is its function?
15. Where is genetic material stored in eukaryotic cells?
16. What is the function of the nucleolus?
17. Uranium Lead Method
18. Types of fossils
19. Polytene chromosome
20. Concept of species
21. K-T extinction
22. . Typical structure of chromosome
23. 24. Prodigality of production
24. 25. Neo- Darwinism
25. 26. Lamarck's theory
  
26. What is the function of ribosomes?
27. Name the powerhouse of the cell.
28. What is the primary function of mitochondria?
29. What does the Golgi apparatus do in the cell?
30. Describe the role of lysosomes.
31. What is the difference between smooth and rough endoplasmic reticulum?
32. What is the structure and function of the endoplasmic reticulum?
33. Why is the rough endoplasmic reticulum "rough"?
34. What is the smooth endoplasmic reticulum's role in lipid metabolism?
35. What is phagocytosis?
36. Describe pinocytosis.
37. Explain receptor-mediated endocytosis.
38. Describe the function of the endoplasmic reticulum.
39. What is the role of the Golgi apparatus.



40. Explain the function of lysosomes in intracellular digestion.
41. Describe the structure and function of peroxisomes.
42. What is a lysosome and how is it involved in cellular digestion?
43. Describe the process of exocytosis and its role in cell secretion.
44. What are the main functions of mitochondria in a cell?
45. Ultrastructure of Golgi complex
46. Structure of Mitochondria
47. Genetic basis of Adaptation
48. Reproductive isolation
49. Mass Extinction
50. What is a cell?
51. Miller's Experiment
52. Functions of Nucleus

Seat No.	
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**B.Sc part-I Sem-I (CBCS) Examination, Oct-Nov 2023**  
**Subject-Zoology (Paper-II)**  
**Subject code-71607**

**Day and Date: Thursday-2/11/2023**  
**Time- 2.30pm-4.30pm**

**Total marks-[50]**

**Q.1 Answer the following questions choosing the correct alternatives given below them. [10]**

**1) The first compound microscope was built by ..... who used the term cell in 1665.**

- a) Galileo                      b) Robert Hook                      c) Leeuwenhook      d) Loewy

**2) The ..... is the heart of the cell.**

- a) Mitochondria              b) Golgi complex              c) Nucleus              d) Ribosomes

**3) The number of chromosomes in man is .....**

- a) 48                              b) 47                              c) 46                              d) 60

**4) The ..... are called 'The power house' of cells.**

- a) Golgi complex              b) Mitochondria              c) Ribosome              d) Lysosomes

**5) The prebiotic earth in the beginning was .....**

- a) Marshy                      b) Rocky                      c) Sandy                      d) Gaseous

**6. Darwin finches are found in .....**

- a) Andman islands                      b) Nicobar islands  
c) Galapogas islands                      d) Sri-lankan islands

**7) The Dinosaurs ruled the earth during ..... period.**

- a) Jurassic                      b) Devonian                      c) Cambrian                      d) Permian

**8) Presence of whole sets of chromosomes is called .....**

- a) Haploids                      b) Diploids                      c) Triploids                      d) Euploidy

**9) The plant *O. Lamarckiana* was studied by .....**

- a) Lamarck                      b) Mendel                      c) Darwin                      d) De-Vries

**10) Fossilized foot print are the type of .....**

- a) Moulds                      b) Petrifications                      c) Casts                      d) Ichnofossils

**Q.2 Write Long answer (Any Two)**

**[20]**

- 1) Give an account of polytene chromosome.
- 2) Describe the 'Fluid mosaic model' of the plasma membrane
- 3) Describe the theory of natural selection.
- 4) Describe the different types of fossils

**Q.3 Write Short Notes on (Any Four)**

**[20]**

- 1) Miller's experiment
- 2) Industrial melanization.
- 3) Functions of mitochondria.
- 4) Types of chromosomes.
- 5) Functions of nucleus.
- 6) Volcanic eruptions.