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D. P. Bhosale College, Koregaon

B.Sc. Part I Semester I

Paper II: Cell Biology and Evolutionary Biology

### Question Bank

#### Multiple choice questions

- 1) Each chromosome consists of two symmetrical spirally coiled and filamentous structure called as \_\_\_\_\_  
a) Chromatids   b) Chromomeres   c) Genes   d) Centromeres
- 2) The \_\_\_\_\_ chromosomes exhibit swellings which have called „puffs“.  
a) Liver   b) Salivary gland   c) Blood   d) Leg muscles
- 3) In \_\_\_\_\_ polytene chromosome is 1000 times larger than the somatic chromosome.  
a) Drosophila   b) Grasshopper   c) House fly   d) Beetle
- 4) 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
- 5) The \_\_\_\_\_ are called “The Power House” of cells.  
a) Lysosomes   b) Ribosomes   c) Golgi complex   d) Mitochondria
- 6) \_\_\_\_\_ was firstly observed in 1945 by porter, Claude and Fullam in cultured cells.  
a) Golgi complex   b) Endoplasmic reticulum  
c) Nucleus   d) Nucleolus
- 7) \_\_\_\_\_ play a role in the formation of acrosome during spermiogenesis.  
a) Golgi complex   b) Nucleolus

- c) Endoplasmic reticulum                      d) Mitochondria

8) \_\_\_\_\_ is intracellular digestion in which enzymes produced by the cell, digest the endogenous material.

- a) Heterophagy   b) Polyphagy   c) Autophagy   d) Phagocytosis

9) The prebiotic earth in the beginning was \_\_\_\_\_

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

10) In the reducing atmosphere of earth, which gas was absent?

- a) Nitrogen      b) Hydrogen      c) Oxygen      d) Ammonia

11) In igneous rocks generally which one of the following is not found?

- a) Uranium      b) Strontium      c) Potassium      d) Radioactive carbon

12) The term „ great dying „ is used for \_\_\_\_\_

- a) K-T extinction                      b) Devonian extinction  
c) Extinction of dinosaurs      d) Permian – Triassic extinction

13) Deccan trap formation is supposed to be due to \_\_\_\_\_

- a) Earthquakes      b) Storms      c) Tsunamis      d) Flood basalt lava

14) Fossilized foot prints are the type of \_\_\_\_\_

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

15) The dinosaurs ruled the earth during \_\_\_\_\_ period

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

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a) Nitrogen    b) Hydrogen    c) Oxygen    d) Ammonia

20) The early cell types which were formed on the earth, were \_\_\_\_\_

a) aerobic, autotrophic                      b) anaerobic, autotrophic  
c) anerobic, heterotrophic                d) aerobic, heterotrophic

21) \_\_\_\_\_ are the basic structural and functional units or building blocks of all living organisms.

a) Bones            b) Tissues            c) Cell            d) Organs

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a) Drosophila    b) Grasshopper    c) House Fly    d) Beetle

23) The prebiotic earth in the beginning was \_\_\_\_\_

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

24) Radioactive carbon  $^{14}\text{C}$  decays into \_\_\_\_\_

a) Cobalt            b) Calcium            c) Nitrogen            d) Uranium

25) Vishnu rock is a name given to a rock layer, which is found in \_\_\_\_\_

a) Badrikedar    b) Gangotri            c) Grand canyon            d) Kailas

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30) Asteroid impact theory for K-T mass extinction is put forward by \_\_\_\_\_

a) Darwin            b) Mendel            c) Alvarez            d) Wegener

31) 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

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- a) Bones
- b) Tissues
- c) Cell
- d) Organs

33) Ultrastructure studies reveal that the nuclear membrane is made of \_\_\_\_\_ membranes.

- a) One
- b) Two
- c) Three
- d) Four

34) \_\_\_\_\_ is this membrane bound cell organelle, having the genetic material and various proteins.

- a) Lysosome
- b) Nucleolus
- c) Nucleus
- d) Ribosomes

35) The \_\_\_\_\_ is the heart of the cell.

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

36) \_\_\_\_\_ are filamentous or thread like or rod shaped bodies present in the nucleus.

- a) Nucleolus
- b) Chromosomes
- c) Genes
- d) Mitochondria

37) The number of chromosomes in man is \_\_\_\_\_

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

38) Presence of whole sets of chromosomes is called \_\_\_\_\_

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

39) \_\_\_\_\_ are „L“ shaped chromosomes having two nearly unequal arms.

- a) Submetacentric
- b) Metacentric
- c) Acrocentric
- d) Telocentric

40) \_\_\_\_\_ are „V“ shaped chromosomes having two nearly equal arms.

- a) Submetacentric
- b) Metacentric
- c) Acrocentric
- d) Telocentric

41) The nucleus was first detected by \_\_\_\_\_ in 1700 as refractile bodies.

- a) Leeuwenhoek
- b) Darwin
- c) Mendel
- d) Brus

42) The outer membrane and inner membrane of the nucleus are separated by-----

- a) Perinuclear space
- b) Perinuclear chromatin

c) Internucleolar chromatin    d) Nuclear envelope

43) Chromosomes were first observed by \_\_\_\_\_ in 1848 in the nuclei of pollen mother cells of *Trandescantia*.

a) Hofmeister    b) Waldeyer    c) Anthony    d) Michaelis

44) Presence of whole sets of chromosomes is called \_\_\_\_\_

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

45) \_\_\_\_\_ are 'V' shaped chromosomes having two nearly equal arms.

a) Submetacentric    b) Acrocentric    c) Metacentric    d) Telocentric

46) The first compound microscope was built by \_\_\_\_\_ who used the term cell in 1665.

a) Galileo    b) Robert Hook    c) Loewy    d) Leeuwenhoek

47) The smallest cell belongs to the genus \_\_\_\_\_

a) *Asterias*    b) *Mycoplasma*    c) *Amoeba*    d) *Ascaris*

48) \_\_\_\_\_ Are two units of measurement of cell sizes.

a) Milligram and Microgram    b) Gram and Kilogram  
c) Micron and Angstrom    d) Meter and kilometer

49) Ultrastructure studies reveal that the nuclear membrane is made of \_\_\_\_\_ membranes.

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51). The fine structure of the nucleoli reported in \_\_\_\_\_

a) 1965    b) 1955    c) 1956    d) 1988

52) \_\_\_\_\_ is main storage center of RNA synthesis and storage of RNA

a) Nucleolus    b) Golgi complex    c) Lysosome    d) Nucleolus

53) Chromosome number in Rat is \_\_\_\_\_

a) 48    b) 42    c) 56    d) 60

54) \_\_\_\_\_ are used for storage of Lipids and Proteins

- a) Stomach    b) Lysosome    c) Nucleolus    d) Golgi complex
- 55) \_\_\_\_\_ plays role in formation of acrosome
- a) Stomach    b) Golgi complex    c) Lysosome    d) Nucleolus
- 56) Which of the following organelle is called the perinuclear dense bodies?
- a) Nucleolus    b) Lysosomes    c) Peroxisome    d) All of the above
- 57) If male donkey and Female Horse crossed will be form \_\_\_\_\_
- a) Henny    b) Tigon    c) Mule    d) None of these
- 58) Archaeopteryx is connecting link between \_\_\_\_\_
- a) Mammals and reptile                      b) Reptile and Aves
- c) Pisces and Aves                              d) Mammals and Aves
- 59) 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
- 60) \_\_\_\_\_ helps in removal of dead cells in tissue
- a) Golgi complex    b) Lysosome    c) Plasma membrane    d) Nucleolus

### Long Questions

1. What is evolution? Explain detail theory of chemical evolution:
2. Describe the Oparin-Haldane theory of chemical evolution.
3. Describe Miller- Urey experiment?
4. Describe detail the theory of natural selection. ?
5. Describe the Concept of Species?
6. Describe De Vries theory of organic evolution?
7. Describe different types of fossils.
8. What do you mean by dating of fossil? Write in brief the carton dating method?
9. What is mass extinction & Give any five causes?
10. Describe asteroid impact theory for mass extinctions?
11. What do you mean by Decean Trap? How it related to K.T extinction?
12. Describe Lamarck's theory of Organic evolution types of fossil.

13. Describe genetic Basis of Adaptation in detail
14. Describe Golgi complex in detail
15. Describe Fluid mosaic model of Plasma membrane?
16. Give an account of Ultrastructure of Nucleus add note on nuclear pore complex
17. Give account of polytene chromosome
18. Give an Account on Nucleosome and add note on solenoid model
19. Describe ultrastructure of Lysosome
20. Give an account on functions of the endoplasmic reticulum

### **Write Short Notes on following**

1. Miller's Experiment
2. Functions of Nucleus
3. Carbonization
4. Uranium Lead method
5. Variation
6. Types of Chromosomes
7. Carbon dating method
8. Gene Migration
9. Structure of Nucleosome
10. Plasma membrane
11. Ultrastructure of Lysosome
12. Function of Lysosome
13. Ultrastructure of Golgi complex
14. Structure of Mitochondria
15. Genetic basis of Adaptation
16. Reproductive isolation
17. Mass Extinction
18. Uranium Lead Method
19. Bottle Neck phenomenon
20. Struggle for existence

21. Industrial melanization
22. Major Steps in chemical evolution
23. Typical structure of chromosome
24. Prodigality of production
25. Neo- Darwinism
26. Lamarck's theory
27. Types of fossils
28. Polytene chromosome
29. Concept of species
30. K-T extinction