



# LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc. DEGREE EXAMINATION – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

**FIRST SEMESTER – NOVEMBER 2023**

**UPB 1501 – CELL BIOLOGY AND EVOLUTION**

Date: 01-11-2023

Dept. No.

Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

**Draw diagrams / flowcharts wherever necessary.**

## SECTION A - K1 (CO1)

**Answer ALL the Questions**

**(10 x 1 = 10)**

### 1. Fill in the blanks

- The \_\_\_\_\_ disappears when a cell undergoes division and is reformed at the end of cell division.
- The pictorial representation of chromosomes useful for identifying various abnormalities is called \_\_\_\_\_.
- Pairing of homologous chromosomes takes place during \_\_\_\_\_.
- The three-dimensional image of the specimen can be obtained by \_\_\_\_\_.
- The proposition that individuals within a species shows variation was proposed by \_\_\_\_\_.

### 2. True or False

- The acrosome of sperm cells is derived from the organelle Lysosome.
- The area where the two chromatids are attached to each other is called Centromere.
- Meiosis occurs in somatic cells.
- The DNA of Eukaryotes are linear.
- The physical changes occurring in an individual during its lifetime are inherited by its offspring.

## SECTION A - K2 (CO1)

**Answer ALL the Questions**

**(10 x 1 = 10)**

### 3. Match the following

- Ergastic substance - long neck of Giraffe
- Lysosome - S phase
- Telomere - Starch
- DNA replication - Hydrolytic enzyme
- Lamarck - Chromosome Terminal end

### 4. Answer the following

- Write a note on amitosis.
- Define Histones.
- Enlist the functions of Golgi apparatus.
- Comment on Mutational theory of evolution.
- List out the characteristics of Cytoplasm.

## SECTION B - K3 (CO2)

**Answer any TWO of the following each in about 500 words.**

**(2 x 10 = 20)**

- Sort the differences between Prokaryotic and Eukaryotic cell.
- Classify the types of Chromatins and mention their genetic significance.
- Elaborate on various stages of cell cycle.
- Categorise the different types of speciation and factors affecting it.

**SECTION C – K4 (CO3)**

**Answer any TWO of the following each in about 500 words. (2 x 10 = 20)**

- |     |   |
|-----|---|
| 9.  | Briefly describe the working mechanism of Phase Contrast Microscopy and give its applications.    |
| 10. | Distinguish between the different types of Endoplasmic Reticulum and add a note on its functions. |
| 11. | Differentiate Polytene chromosome from Lamp brush chromosome.                                     |
| 12. | Analyze the theory proposed by Darwin with examples.  |

**SECTION D – K5 (CO4)**

**Answer any ONE of the following in about 1000 words. (1 x 20 = 20)**

- |     |   |
|-----|---|
| 13. | Explain the components, principle and working mechanism of TEM.   |
| 14. | Elucidate the structure of Mitochondria, its origin and function. |

**SECTION E – K6 (CO5)**

**Answer any ONE of the following in about 1000 words. (1 x 20 = 20)**

- |     |  |
|-----|--|
| 15. | Summarize the various stages of Meiosis with its significance. |
| 16. | Elaborate on Modern Synthetic theory of Evolution.             |

&&&&&&&&&&