

Register Number:

Date:

**ST. JOSEPH’S UNIVERSITY, BANGALORE-27**

**B.Sc. (ZOOLOGY) - I SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2023**

**(Examination conducted in November /December 2023)**

**ZO121 – CYTOLOGY AND GENETICS**

**(For current batch students only)**

**Time- 2 Hours Max marks-60**

**Note: Draw diagrams wherever necessary**

**This paper contains Two printed pages and Three parts**

**Part – A**

**I. Answer all the following. 10X1=10**

1. \_\_\_\_\_\_\_\_\_\_\_ is the non-histone protein involved in folding or packing of chromosome.
2. Linked genes exhibit recombination frequencies less than \_\_\_\_\_\_%.
3. Telomeres consist of \_\_\_\_\_\_\_\_\_\_ hexameric repetitive noncoding sequences.
4. Apoptosome complex is formed in \_\_\_\_\_\_\_\_\_\_\_ caspase pathway of apoptosis.
5. Name the toxic protein produced by the killer strains of *Paramecium aurelia.*
6. Chromatids are held together by \_\_\_\_\_\_\_\_\_\_\_\_ protein.
7. Haemolysis caused by Rh fetal-maternal incompatibility is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. Enumerate GPCRs.
9. Define Pleiotropy.
10. X- linked dominant: Fragile X Syndrome; X- linked recessive: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Part - B**

**II. Answer any Four of the following. 4X5=20**

**11.** Explain cell cycle checkpoints and their functions with a neat labelled diagram.

**12.** Explain dominant epistasis with an example.

**13.** Classify signaling systems based on the distance they act upon.

**14.** Skin colour of man is determined by many genes – substantiate the statement with a worked-out problem.

**15.** Mention the functions of Smooth Endoplasmic Reticulum.

**16.** Describe the mechanism of dosage compensation in humans by stating Lyon’s hypothesis.

**Part – C**

**III. Answer any Three of the following. 3X10=30**

**17.** Describe cell junctions and their types with an example each.

**18.** Explain epigenetic landscape with a brief note on Waddington’s model.

**19.** Explain heterogametic male and female chromosomal sex determination with an example each.

**20.** Write a note on structure and function of cytoskeletons.

**21.** Briefly describe the structure and function of peroxisome.