

Register Number:

Date: 07-03-2022

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27**

**B.Sc. ZOOLOGY – I SEMESTER**

**END SEMESTER EXAMINATION: OCTOBER 2021**

**(Examination conducted in March 2022)**

**ZO 121: Cytology and Genetics**

**Time - 3 hrs Max marks-100**

**PART A**

**Answer the following 15 X 1 = 15**

1. What is a glycocalyx?
2. Mention two examples of sex-linked inheritance.
3. What does ‘+’ and ‘–‘ ends refer in a cytoskeletal filament?
4. Define pinocytosis.
5. Mention any two comb patterns in fowls.
6. When is a secondary lysosome formed?
7. What would be the genotype of the parents whose children belong to all four blood groups?
8. Which is the site of rRNA synthesis?
9. Name the proteins that support the inner nuclear membrane.
10. Which is the cell organelle that produces hydrogen peroxide?
11. What is the phenotype ratio of a back cross?
12. Birds exhibit which type of sex determining mechanism?
13. Name the lethal condition in developing embryo due to Rh incompatibility.
14. Which genotypes of paramecia are considered ‘killers’?
15. Define norm of a reaction

**PART B**

**Answer any 4 the following 5 X 5 = 25**

1. How do carrier proteins help in transport across membrane compared to channel proteins, illustrate the two with diagrams.
2. Explain polygenic inheritance with reference to skin colour
3. Construct your family pedigree and explain the same.
4. Enumerate the formation and structural details of microtubules.
5. Chromatin is referred to as ‘beads on string’- explain the model explaining the same.
6. Apoptosis is a normal genetically programmed cell death-substantiate with any one pathway.
7. Discuss Waddington’s model of epigenetic landscape.

**PART C**

**Answer any 4 of the following 4 X 15 = 60**

1. Traversing most space inside the cell the endomembrane system is crucial for protein transport and sorting- Discuss and depict it diagrammatically.
2. Explain the genic balance theory. Add a note on free martins
3. Cell junctions reveal that the interacting plasma membranes (and often the underlying cytoplasm and the intervening intercellular space as well) are highly specialized in these regions – Define them and detail the structural roles of anchoring junctions.
4. Explain the structural and numerical anamolies you have studied.
5. ‘Meiosis I is reductional and recombinant in nature’- Substantiate

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