

Reg. no.:

Date:14-03-2022

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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BANGALORE-27** |  |
| **B.Sc. ZOOLOGY - V SEMESTER** |  |
| SEMESTER EXAMINATION: OCTOBER 2021(Examination conducted in March 2022) |  |
| **ZO 5118 - Cell Biology, Molecular Biology and Immunology** |  |
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| **Time- 2 1/2 hrs** |  |  **Max Marks - 70** |  |  |
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| **This paper contains 2 printed pages and three parts** |  |

**Note: Draw neat labelled diagrams wherever necessary**

**Indicate the question numbers clearly.**

**PART A**

**Answer the following: 7 X 1 = 7**

1. \_\_\_\_\_\_\_\_\_\_\_\_ microscopy techniques relies on the specimen interfering with the wavelength of light to produce a high contrast image without the need for dyes or any damage to the sample
2. The carrier proteins that mediate active transport are called as \_\_\_\_\_\_\_\_\_\_\_
3. Exchange of segments between non-homologous chromosome is called \_\_\_\_\_\_\_\_\_\_\_
4. Some organs contain stem cells, called \_\_\_\_\_\_\_\_ stem cells, that persist throughout life and contribute to the maintenance and repair of those organs
5. Initiation codon of protein synthesis in eukaryotes is \_\_\_\_\_\_\_\_\_\_
6. Conversion of messages carried by mRNA into amino acid sequences is called\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_ cells are involved in cell-mediated immunity

**PART B**

**Answer the following: 4 X 2 = 8**

1. What is Nexus? How does it help in intercellular communication?
2. In an experiment, DNA was found to have 19% adenine. What is the percentage of Guanine.
3. What is the role of p53 in Cancer?
4. Depict schematically the central dogma of molecular biology

**PART C**

**Answer any FIVE of the following: 5 X 5 = 25**

1. With a neat labelled diagram, explain why Golgi apparatus is referred to as the traffic police of the cell
2. Explain the structure and the reason why a giant interphase chromosome is formed in *Drosophila melanogaster*
3. List the components of the plasma membrane with their functions. Why is it important that there are different types of proteins for the transport of materials in and out of the cell.
4. Each one of us have enough DNA to reach from here to the sun and back, more than 300 times. How is all of that DNA packaged so tightly into chromosomes and squeezed into a tiny nucleus
5. Explain the mechanism that allows the cells to self-destruct when stimulated by an appropriate trigger
6. Explain how degeneracy of the genetic codon has played an important role in protei synthesis
7. An allergic response sometimes leads to a person’s death. Explain.

**PART D**

**Answer any THREE of the following: 3 X 10 = 30**

1. With a neat labelled diagram, explain the principle and working of a microscope used for obtaining high resolution images of biological samples
2. What is a karyotype? Explain the procedure involved in the karyotype preparation of Human chromosomes and add a note on FISH.
3. DNA replication is bidirectional and discontinuous. Explain
4. Explain the types of grafts possible and their potential for interaction with the immune system.

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