QPC: RN23PHD415 AY 23 Reg. No

GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (First Semester) Examinations, January – 2024

23PPEZO1011/ PPEZO1021 – Advance Animal Sciences

(Zoology)

Time: 3 hrs Maximum: 70 Marks

The figures in the right-hand margin indicate marks.

Answer ANY FIVE Questions **(14 x 5 = 70 Marks)**

		Marks
1.a.	What are ribozymes, and how do they differ from traditional enzymes in structure and function?	7
b.	Discuss the significance of ribozyme technology in the context of gene therapy and targeted gene manipulation.	7
2.a.	What are antibodies, and how do they play a crucial role in the immune system's defence against pathogens?	7
b.	Discuss the various methods for generating monoclonal antibodies and their applications in research, diagnostics, and therapy.	7
3.a.	How do cells achieve selective permeability of their membranes, and what role does membrane transport play in maintaining cellular homeostasis?	7
b.	Explore the connection between membrane transport and cellular signalling pathways, emphasizing how the movement of ions and molecules across membranes influences signal transduction and response.	7
4.a.	What is radioimmunoassay (RIA), and how does it utilize radioactive tracers to quantify specific antigens or antibodies? Discuss the principles behind RIA and its applications in clinical and research settings.	7
b.	Explore the evolution of enzyme-linked immunosorbent assay (ELISA) and its various formats, including direct, indirect, sandwich, and competitive ELISA. How do these formats differ, and what are their specific applications?	7
5.a.	What are stem cells, and how do they differ from differentiated cells? Discuss the unique properties of stem cells, including self-renewal and pluripotency.	7
b.	Elaborate on the process of reprogramming somatic cells into induced pluripotent stem cells (iPSCs) and the implications of this technology for personalized medicine and disease modelling?	7
6.a.	What is sericulture? Discuss the sericulture lifecycle, mulberry cultivation, and the silk production process.	7

b.	Discuss the advancements in sericulture research and technology, including the development of hybrid silkworm varieties, improved rearing practices, and innovations in silk processing.	7
7.a.	Discuss the importance of beekeeping in pollination, honey production, and the conservation of biodiversity. Explore the various types of honeybees and their roles in apiculture.	7
b.	Elaborate on the techniques and management practices involved in beekeeping, including hive construction, colony maintenance, and disease control.	7
8.a.	Elaborate on the Beer-Lambert Law and its application in UV-visible absorption spectroscopy for quantitative analysis. Discuss the factors that can affect the accuracy of concentration measurements.	7
b.	How does UV-visible spectroscopy contribute to the analysis of biological macromolecules such as proteins and nucleic acids? Discuss specific examples of applications in life sciences.	7

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