Reg. No. : ....

Name : ....

Ph.D. ENTRANCE EXAMINATION 2023

FACULTY OF SCIENCE

ZOOLOGY

Time : 3 Hours   Max. Marks : 100

***Instructions* :**

1) *Answer **any ten** questions each from* Section ***A** and* Section ***B.***
2) *Each question carries **5** marks.*
3) *No additional Answer sheets will be provided.*
4) *Candidates should clearly indicate the section, Question number in the answer booklet.*

Section – A

Research Methodology

I. Answer any **ten** questions. Each question carries **5** marks.

1. Write notes on the types of research. Discuss the significance of interdisciplinary research.

2. Write about the utility of abstracting/indexing journals.

3. What are the key aspects to be considered to increase the acceptability of a scientific article?

4. Discuss the various steps involved in research process.

5. What is the significance of carrying out a review of relevant literature before starting research? Comment on the resources available for collecting the relevant literature.

6. Write notes on various research indices such as h, i10 and g index.

7. What is meant by the LC50? Describe a method to find out the LC50 of a toxic chemical in a fish.

8. Describe the features of a good experimental design.

9. What are the online DNA and protein data banks available for researchers in life sciences? Comment on the utility of these online data banks.

10. What are the means by which universities can promote interdisciplinary research?

11. Describe the structure of a scientific article.

12. Discuss the significance of statistical tools for validation of research data? Write notes on PRIMER and PERMANOVA.

13. What is meant by the impact factor of a journal? Why is it important to publish in a journal with good impact factor?

14. What is meant by IPR? Why is it important in research and development? Comment on the significance of patenting an invention.

15. Discuss various aspects of scientific misconduct. What are the tools available for checking scientific misconduct such as plagiarism?

(10 × 5 = 50 Marks)

Section – B

Zoology

II. Answer any **ten** questions. Each question carries **5** marks.

1. Write notes on polyphasic taxonomy.

2. Describe the various taxonomic procedures.

3. What is meant by C-value Paradox?

4. Discuss the various stages in primate evolution.

5. Describe the unique features of water molecule. Why is it known as universal solvent?

6. Write notes on the classification of enzymes.

7. Comment on the diseases associated with aging.

8. Discuss photo-bioenergetics.

9. Briefly describe the various types of electron microscopes.

10. Discuss the utility of spectrophotometry in life science research.

11. What is meant by artificial intelligence and machine learning? Is it useful in life science research?

12. Discuss the major osmoregulatory challenges faced by fresh water and marine teleosts. Comment on various mechanisms adopted by them to face these challenges.

13. Differentiate between vertebrate and invertebrate endocrine system.

14. What is a biodiversity hotspot? Why most of the biodiversity hotspots are in the tropical region?

15. Describe theory of natural selection.

(10 × 5 = 50 Marks)

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