

Reg. No. : .....

Name : .....

**Ph.D. ENTRANCE EXAMINATION, NOVEMBER 2022**

**FACULTY OF SCIENCE**

**ZOOLOGY**

Time : 3 Hours

Max. Marks : 100

**Instructions :**

- 1) Answer **any ten** questions each from Section **A** and **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. All Questions carry equal marks.
1. Write an account of different types of research.
2. Briefly explain plagiarism in research and its consequences.
3. What is a hypothesis? Explain null hypothesis and alternative hypothesis.
4. Comment on impact factor and citation index.
5. Enumerate the different methods of data collection.
6. Discuss the significance of literature survey in research.

7. Write notes on online libraries.
8. Describe the characteristics and format for writing a research thesis.
9. Describe measures of central tendency.
10. Discuss ethics in research.
11. Explain the structure of a research paper.
12. Briefly discuss the features of a good research design.
13. Write notes on; (a) Student 't' test (b) ANOVA
14. Write a short note on bibliography and its importance in research report.
15. Briefly explain intellectual property rights and their significance in biological research.

**(10 × 5 = 50 Marks)**

### **Section – B**

#### **Zoology**

- II. Answer any **ten** questions. All Questions carry equal marks.
1. Explain cell cycle. Add a note on control and check points in cell cycle.
  2. Comment on different types of antibodies and their significance in immune response.
  3. Explain in-situ and ex-situ conservation.
  4. Write notes on second messenger system.
  5. Briefly describe eukaryotic RNA processing.
  6. Give an account of MAP kinase pathway.

7. Describe the beta oxidation of fatty acids.
8. Elucidate the chemical events that take place during glycolysis.
9. Write notes on phylogenetic gradualism and punctuated equilibrium.
10. Briefly explain DNA fingerprinting and its applications.
11. What are genetically modified organisms? Give your opinion on the advantages and disadvantages of GMOs.
12. Write brief notes on:
  - (a) Gamete intrafallopian transfer
  - (b) Zygote intrafallopian transfer
  - (c) Tubal embryo transfer
  - (d) Intracytoplasmic sperm injection
13. Explain classical and operant conditioning.
14. Discuss the principle and working of phase contrast microscope. Mention its applications.
15. Write notes on biodiversity hotspots in India.

**(10 × 5 = 50 Marks)**