

## M.Sc Sem-3 Examination

501

Zoology

Time : 2-30 Hours]

November-2024

[Max. Marks : 70

|       |                                 |                                                                                                                                                                                                                                                                                                            |      |
|-------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Q-I   | 1                               | Discuss the methods and advantages of Probabilistic sampling.                                                                                                                                                                                                                                              | (14) |
|       | 2                               | Explain Mean, Median and Mode of data, giving examples, use and limitation.                                                                                                                                                                                                                                |      |
|       | OR                              |                                                                                                                                                                                                                                                                                                            |      |
|       | 1                               | Write a note on methods and errors in data collection. Explain different types of data.                                                                                                                                                                                                                    |      |
|       | 2                               | Distinguish between the absolute and relative measures of Dispersion. Determine the SD and SE for the data: X= 0.3, 0.8, 0.5, 0.9, 0.5, 0.4, 0.2, 0.7                                                                                                                                                      |      |
| Q-II  | 1                               | What is t-test? Explain its usage along with the comparison of its main three types. Mention the formula for calculation of one sample t-score.                                                                                                                                                            | (14) |
|       | 2                               | Calculate the DFB, DFW, DFTotal, SSW, SSTotal, SSB, MSW, and MSB values from the given data: Group 1: 15, 13, 9, 19, 11; Group 2: 9, 7, 7, 9, 11; Group 3: 3, 7, 13, 3, 5.                                                                                                                                 |      |
|       | OR                              |                                                                                                                                                                                                                                                                                                            |      |
|       | 1                               | What is Chi-square test? Explain its five types with examples and mention the formula for calculation.                                                                                                                                                                                                     |      |
|       | 2                               | A random sample of 12 patients with specific disorder shows the sample mean heart rate 108 with a sample standard deviation of 8. Check whether the average heart rate of a random sample of 12 patients differs significantly from a normal value of 72 using one sample t test. Critical t-value = 2.201 |      |
| Q-III | 1                               | What is Protein-Protein Interaction? Explain any two databases used for Protein-Protein Interaction.                                                                                                                                                                                                       | (14) |
|       | 2                               | Explain in detail: Entrez database.                                                                                                                                                                                                                                                                        |      |
|       | OR                              |                                                                                                                                                                                                                                                                                                            |      |
|       | 1                               | What is DNA sequence database? Explain any two DNA sequence databases in detail along with applications.                                                                                                                                                                                                   |      |
|       | 2                               | Write a note: Phylogeny analysis tools and databases.                                                                                                                                                                                                                                                      |      |
| Q-IV  | 1                               | Explain the process for the derivation of the hypothesis.                                                                                                                                                                                                                                                  | (14) |
|       | 2                               | Write a note on the Institutional Biosafety Committee.                                                                                                                                                                                                                                                     |      |
|       | OR                              |                                                                                                                                                                                                                                                                                                            |      |
|       | 1                               | Explain the process for deriving the research problem.                                                                                                                                                                                                                                                     |      |
|       | 2                               | Write a note on CPCSEA.                                                                                                                                                                                                                                                                                    |      |
| Q-V   | Answer any SEVEN out of TWELVE. |                                                                                                                                                                                                                                                                                                            | (14) |
|       | 1                               | Explain the use of Scatter plot and Box plot.                                                                                                                                                                                                                                                              | 02   |
|       | 2                               | Distinguish between Descriptive and Inferential Statistics.                                                                                                                                                                                                                                                | 02   |
|       | 3                               | Derive the relationship between Standard Error and sample size.                                                                                                                                                                                                                                            | 02   |
|       | 4                               | Define null and alternative hypothesis.                                                                                                                                                                                                                                                                    | 02   |
|       | 5                               | What is sampling? Mention two different reasons for sampling                                                                                                                                                                                                                                               | 02   |
|       | 6                               | Define linear regression. Differentiate between simple and multiple linear regression                                                                                                                                                                                                                      | 02   |
|       | 7                               | What is PFAM?                                                                                                                                                                                                                                                                                              | 02   |
|       | 8                               | Write down any four application of nucleotide databases.                                                                                                                                                                                                                                                   | 02   |
|       | 9                               | What is GenBank in NCBI?                                                                                                                                                                                                                                                                                   | 02   |
|       | 10                              | What is the difference between the impact factor and the H-index?                                                                                                                                                                                                                                          | 02   |
|       | 11                              | Briefly explain the Empirical Research.                                                                                                                                                                                                                                                                    | 02   |
|       | 12                              | Write any four characteristics of good scientific research.                                                                                                                                                                                                                                                | 02   |