2026

2nd Semester Examination

M.F.Sc. in Aquaculture

Paper : STAT 501-T

(Statistical Methods for Applied Sciences)

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Full Marks : 70 Time : Two Hours

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

Group - A

Answer any ***five*** questions : 2×5=10

1. What is meant by standard error? State its importance in statistical inference.
2. Distinguish between correlation and regression.
3. Define an unbiased estimator and a consistent estimator.
4. If the probability of fish survival is 0.75, what is the probability of mortality?
5. What is meant by sampling error?
6. Define systematic sampling.

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7. What is a chi-square test? Mention one of its applications.

8. Mention the objectives of fisheries statistics.

Group - B

Answer any ***six*** questions : 5×6=30

9. Explain the concept of confidence interval for a population mean and describe the role of the level of significance in statistical inference. 5

10. Explain four major differences between export marketing and domestic marketing of fishery products. What is profit margin? 4+1

11. The following data represent fish length and body weight: Calculate the Pearson's correlation coefficient. Regression equation of weight on length. Estimate the weight of a fish of 17 cm length.

Length (cm)	10	12	14	16	18	20
Weight (g)	22	28	33	40	47	55

2+2+1

12. The following data represent the number of fish caught by five fishermen: 12, 18, 15, 20, 25. Calculate the mean and variance. 2+3

13. Difference between sample and population. State one advantage of using a sample. 4+1

14. A fish farm claims that the average weight of harvested Rohu is 1.20 kg. A random sample of 64 fish has a mean weight of 1.15 kg. The population SD is 0.20 kg. Test the claim at the 5% significance level. Calculate Z value.

15. Write short notes on :

    (i) Histogram

    (ii) Frequency distribution 2½+2½

16. Explain one-way analysis of variance (ANOVA). State its assumptions and the basic logic of the F-test.

17. Explain the advantages and disadvantages of non-parametric test.

18. Explain the construction and interpretation of a frequency curve, histogram and pie diagram in presenting statistical data.

Group - C

Answer any ***one*** question : 10×1=10

19. A researcher records disease status in fish from two culture systems: Calculate χ^2. Determine degrees of freedom. Test the significance at the 5% level. 5+2+3

Culture System	Diseased	Healthy	Total
Pond	30	70	100
Biofloc	15	85	100

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20. Explain simple linear regression including regression coefficients and goodness of fit. Discuss regression analysis as tools for analysing biological and applied data. 6+4

[Internal Assessment : 20 marks]

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