

Total Pages—5

PG/IIIS/FSC/301 (U1&U2)
/24

M. Sc. 3rd Semester Examination, 2024

FISHERIES SCIENCE

PAPER — FSC-301(Unit-1 & Unit-2)

Full Marks : 50

Time : 2 hours

Answer all questions

The figures in the right hand margin indicate marks

*Candidates are required to give their answers in
their own words as far as practicable*

PAPER — FSC-301 (Unit-1)

*(Fisheries Statistics, Research Methodology
& Ethics)*

[Marks : 20]

1. Answer any *two* questions from the following :
- (a) Classify different types of central tendency measurement. 2×2

(Turn Over)

(b) What is plagiarism ? Write name of two plagiarism software.

(c) Differentiate law from hypothesis.

(d) Define frequency and cumulative frequency.

2. Answer any *two* questions from the following : 4×2

(a) Discuss different steps and elements in research process.

(b) State the importance of diagrammatic representation of data.

(c) Calculate the Coefficient of correlation between Length (X) and weight (Y) variables collected from *Labeo rohita* fish of a pond and comment on your result.

X (cm)	24	22	26	19	27	20	18	21
Y (g)	17	11	16	12	15	15	13	15

(d) Discuss the statistical application in research.

3. Answer any *one* question from the following :

(a) Define mean deviation and standard deviation. For a group of 50 *Labeo rohita* fishes the mean and standard deviation of weight (g) are 59.5 and 8.38. For a group of 40 *Catla catla* fish the same result are 54 and 8.23. Find the mean and SD of the combined group of 90 fishes. 8×1
 $3 + 5$

(b) Mention important characteristics of a good researcher. How to write the review of literature in your dissertation thesis ? Differentiate between references and bibliography. $2 + 4 + 2$

PAPER – FSC-301 (Unit-2)

(*Immunology, Genetic Engineering and Bio-instrumentation*)

[Marks : 20]

- 4 . Write short note on any *two* of the following : 2 × 2
- (a) Define Immunology and mention the importance of Genetic Engineering.
 - (b) Write the principle of gene cloning techniques.
 - (c) Write a note on Hypersensitivity reactions.
 - (d) What do you mean distribution coefficient in chromatographic technique ?
5. Write short note on any *two* of the following : 4 × 2
- (a) Define Northern blotting and Southern blotting. 2 + 2
 - (b) Briefly describe the procedure and application of Iso-electric focusing (IEF). 3 + 1
 - (c) What is cryo-protectant ? Describe the procedure of cryopreservation of fish milt. 1 + 3

(5)

- (d) Write short note on NK cells & antimicrobial proteins in immune defense. 2 + 2
6. Attempt any *one* question from the following : 8×1
- (a) What are primers ? Briefly describe different steps of polymerase chain reaction (PCR) and its application. 2 + 4 + 2
- (b) What is first line of defense in fish ? Describe the structure and function of secondary lymphoid organs in fish with suitable examples. 2 + 4 + 2

[Internal Assessment – 10 Marks]

