



Khulna University, Khulna

School: Life Science

Discipline: Fisheries and Marine Resource
Technology

Program: BSc in Fisheries (Hon's)

Year: 3rd

Term: II

Examination Year: 2025

Session: 2023-2024

Course Code: 0831 06 FMRT 3201

Course Title: Fish Population Dynamics

Total Marks: 60

Time: 3 Hours

Credit: 03

Instructions: Use Separate answer script for each section

Section A

There are four (04) questions in this section. Answer any three (03) questions.

1. a) 'Fish population dynamics helps in proper management and conservation of fish stock'- justify. [L1; CLO1] 03
b) What do you mean by stock? Describe with suitable example. [L2; CLO1] 03
c) Narrate the basic population parameters of a fish stock. [L3; CLO1] 04
2. a) What do you mean by biometric estimation of a fish population? [L2; CLO2] 03
b) 'Knowledge regarding length-weight relationship (LWR) is essential for growth assessment'- justify. [L4; CLO2] 04
c) Write down the importance of measuring relative weight (W_R). [L3; CLO2] 03
3. a) Establish relationship between age and growth of fish. [L5; CLO2] 02
b) How shall you determine the age of fish by observing otoliths? [L6; CLO2] 05
c) Describe the factors affecting fish growth. [L6; CLO2] 03
4. a) 'Often in fisheries work, only the ovaries found in females are studied'- justify. [L4; CLO3] 03
b) Discuss the relationship between abundance and distribution of a fish population. [L5; CLO4] 03
c) Narrate your ideas regarding fish stock assessment with suitable example. [L6; CLO5] 04

Section B

There are four (04) questions in this section. Answer any three (03) questions.

5. a) What do 'stock', 'effort' and 'catchability coefficient' indicate in fish population dynamics? [L1; CLO6] 03
b) Distinguish between equilibrium and non-equilibrium model of SPM. [L4; CLO6] 02
c) What is the basis for selecting effective MSY obtained from different SPM models? [L2; CLO10] 02
d) Calculate Catch, MSY and F_{msy} following fox model when the constant and slope between CPUE and effort are 2.5 and -0.00005 respectively and the effort is 1000 hmnd. [L5; CLO10] 03
6. a) What is recruitment? How do you estimate recruitment time from length frequency data? [L1; CLO7] 04
b) Explain the match/mismatch hypothesis in stock-recruitment relationship. [L2; CLO7] 03
c) 'The compensation parameter (b) in stock recruitment relation is the degree to which density independent effects compensate for changes in stock size' – explain with illustration. [L5; CLO7] 03
7. a) Differentiate between length based catch curve and age based catch curve. [L4; CLO7] 02
b) Estimate mortality (Z) from the following data set: (L5, CLO7) 08

Age:	7	8	9	10	11	12	13	14
Number:	305	193	100	71	33	21	12	7
8. a) What is economic break event point? [L1; CLO9] 02
b) Distinguish between marking and tagging in fish. [L4; CLO8] 02
c) Draw a fish showing the positions of tag. [L2; CLO8] 03
d) Discuss the importance of fish population dynamics in fisheries management. [L3; CLO11,12] 03