

KHULNA UNIVERSITY

Fisheries and Marine Resource Technology Discipline

4th Year, 2nd Term Examination

Session: 2023 – 2024

Course No.: FMRT – 4201

Course Name: Aquatic Pollution and Toxicology

Full Marks: 60

Time: 03 Hours

Credit Hours: 03

- Figures in the margin indicate full marks. The questions are of equal value.
- Use separate sheet for each section.

Section – A

There are **FOUR** questions in this section, answer any **THREE** questions

- What do you mean by eutrophication? 02
 - Outline the sequence of chemical and biological events that lead to oxygen depletion in a eutrophic water body. 03
 - How do atmospheric CO₂ levels lead to ocean acidification and disrupt the carbonate buffering system? Explain. 05
- Briefly discuss the factors affecting intensity of pollution in aquatic environments. 03
 - Distinguish between contaminant and pollutant with appropriate examples. 03
 - Explicate the phenomenon of 'imposex' in marine gastropods and its link to pollution. 04
- Define heavy metal and list three examples that are toxic to aquatic organisms. 02
 - How does cadmium enter the aquatic food chain? Describe the bioaccumulation pathways of cadmium. 03
 - Narrate the roles of fish intestinal parasites as biological filters for heavy metals. 05
- What is an oil sink? 02
 - How does oil lead to hypothermia in sea otters? Explain. 03
 - A dispersant is a chemical method used in oil spill mitigation. Analyze one potential advantage and one potential disadvantage of its use. 05

Section – B

There are **FOUR** questions in this section, answer any **THREE** questions

- Define ecological indicator. What are the key requirements to assess ecosystem health? 03
 - What are microplastics? Explain the routes of microplastic entry in aquatic ecosystems. 03
 - How will you use microbes for bioremediation of plastic pollution? Narrate a laboratory test that is used for detecting the ability of microbes for plastic degradation. 04
- How will you determine the generation time of a microbial population? Explain. 03
 - Analyze the methods of using microbes to develop resistance against toxic compounds in polluted water. 03
 - Why should Mueller-Hinton agar be used for the disk diffusion test? How does human error affect the accuracy of disk diffusion results? 04
- Distinguish between pesticides and insecticides with examples. 03
 - Why are organochlorines known as persistent organic pollutants (POPs)? Explain. 04
 - Discuss the toxic effects of insecticides on non-target organisms, particularly on fish and human. 03
- Write down the ethical considerations in using animal models to study chronic effects. 03
 - "Fish embryos are ideal for environmental risk assessment of chemicals" – justify. 04
 - How do regulatory measures help to prevent aquatic pollution from fertilizers and pesticides? Explain. 03