

KHULNA UNIVERSITY, KHULNA

School: Life Science

Program: MS in Coastal and Marine Science

Course: 0831 06 CMS-5201

Time: 3 hours

Discipline: Fisheries and Marine Resource Technology

Examination: MS 1st Year 2nd Term Session: 2024-25

Course Title: Biological Oceanography Credit: 03

Marks: 60

*The figure in the margin indicates full marks.

*Use separate answer script for each section.

SECTION – A

[There are **FOUR** questions in this section. Answer any **THREE** questions.]

- Q.1 a) Write down the importance of studying 'Biological Oceanography'. [L-2, CLO-1] 02
- b) 'Plankton is used as an ecological model organism for environmental monitoring.' - justify. [L-5, CLO-1] 04
- c) Discuss the effects of temperature variations on primary productivity. [L-6, CLO-1] 04
- Q.2 a) Illustrate microbial food web in marine ecosystem. [L-2, CLO-1] 03
- b) Explain the importance of biogeography in understanding zooplankton distribution and abundance. [L-2, CLO-1] 03
- c) Briefly describe how salinity and temperature affect distribution of zooplankton. [L-4, CLO-1] 04
- Q.3 a) Differentiate between i) nekton and seston; ii) energy pyramid and biomass pyramid [L-2, CLO-1] 04
- b) Explain how marine fish maintains salt concentration when it migrates to rivers. [L-3, CLO-1] 03
- c) Give an account of the adaptation processes of nekton in marine environment. [L-5, CLO-1] 03
- Q.4 a) What do you mean by epifauna and infauna? [L-1, CLO-1] 02
- b) Explain the importance of cephalopods in marine food webs and their contribution to ocean productivity. [L-2, CLO-1] 04
- c) Discuss the probable consequences of climate change effects on pelagic organism. [L-5, CLO-1] 04

SECTION – B

[There are **FOUR** questions in this section. Answer any **THREE** questions.]

- Q.5 a) Mention four cultivable seaweed species in Bangladesh with their common and scientific name. Write the potentiality of seaweed cultivation in Bangladesh. [L-2, CLO-1] 2+2=04
- b) Differentiate between net culture and suspended rope culture method of seaweed. Which culture method is most suitable? - opine. [L-3, CLO-1] 2+1=03
- c) 'Coastal hydrodynamics is regarded as a major challenge for seaweed farming in Bangladesh.' - justify the statement. [L-5, CLO-2] 03
- Q.6 a) Define benthos. Mention the major benthos of coastal waterbodies. [L-2, CLO-2] 1+2=03
- b) 'Marine benthos can play a significant role in nutrient recycling and as indicator species'-Justify your opinion. [L-3, CLO-2] 04
- c) Illustrate how sediment texture influences the community structure and distribution of benthos. [L-5, CLO-2] 03
- Q.7 a) What do you know about global patterns of bacterial beta diversity in sea floor and seawater ecosystems? [L-1, CLO-2] 03
- b) Differentiate between diffusive sublayer and viscous sublayer of BBL. [L-2, CLO-2] 03
- c) 'Marine microbes are widely used in large scale industrial process.' - justify your opinion. [L-5, CLO-2] 04
- Q.8: Write short notes on the followings: [L-2, CLO-3] 2.5 x 4=10
- i) Ecological Succession; ii) Microbial role in N cycle; iii) Seaweed in blue economy; iv) Benthic hotspots.