R0993	Sub. Code
	461201

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Oceanography and Coastal Area Studies

MARINE ECOLOGY AND ZOOGEOGRAPHY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. Deep-sea organisms are typically adapted to which of the following conditions? (CO1, K2)

   (a) High light intensity

   (b) Warm temperatures

   (c) Low salinity

   (d) High pressure

2. What is the main effect of salinity on marine organisms? (CO1, K2)

   (a) Regulates body temperature

   (b) Influences buoyancy and water balance

   (c) Provides essential nutrients for growth

   (d) Determines oxygen levels in the water

3. The transfer of energy from producers to consumers through a series of feeding relationships is described as a ———————— (CO2, K3)

(a) Food chain

(b) Food web

(c) Ecological pyramid

(d) All of the above

4. The ———————— of an ecological pyramid receives the lowest amount of energy. (CO2, K3)

(a) Producer

(b) Primary consumer

(c) Secondary consumer

(d) Tertiary consumer

5. The maximum number of individuals of a population that an environment can support is known as: (CO3, K3)

(a) Population density

(b) Carrying capacity

(c) Dispersal capacity

(d) Niche capacity

6. Which of the following is an example of a density-independent factor affecting population growth? (CO3, K3)

(a) Competition for food

(b) Predation

(c) Drought

(d) Disease

7. The process of ecological change in an area over time is known as: (CO4, K4)

(a) Endoecism (b) Succession

(c) Niche (d) Phoresis

8. What is the term for the relationship between two species, where one benefits and the other is unaffected? (CO4, K4)

(a) Parasitism (b) Commensalism

(c) Competition (d) Mutualism

9. What is the main reason for the over-exploitation of marine resources? (CO5, K2)

(a) Lack of awareness about the importance of marine biodiversity

(b) Insufficient international regulations on marine resource management

(c) Economic incentives to maximize short-term profits

(d) Inadequate scientific knowledge about marine ecosystems

10. Bio-security refers to measures taken to: (CO5, K2)

(a) Protect marine organisms during transportation

(b) Control the population size of marine predators

(c) Prevent the spread of invasive species

(d) Increase the genetic diversity within a marine species

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 words each.

11. (a) Express the importance of light, temperature, salinity, and pressure in the marine environment. (CO1, K2)

Or

(b) Relate how temperature variations affect the distribution of marine organisms. (CO1, K2)

12. (a) Distinguish the concept of an ecosystem structure and function in the marine ecosystem. (CO2, K3)

Or

(b) Interpret the role of primary producers in energy transfer. (CO2, K3)

13. (a) Determine how variation in population density occur within a species. (CO3, K3)

Or

(b) Categories a density-dependent factor that can affect population growth. (CO3, K3)

14. (a) Distinguish the difference between phoresis and epizoism in animal association. (CO4, K4)

Or

(b) Illustrate the concept of mutualism in animal associations and provide an example. (CO4, K4)

15. (a) Aalyze the potential consequences of physical alteration of a specific marine habitat. (CO5, K4)

Or

(b) Explain the importance of marine biodiversity in maintaining ecological balance in the oceans. (CO5, K4)

Part C ($5 \times 8 = 40$)

Answer **all** questions not more than 1000 words each.

16. (a) Outline the adaptations of planktonic organisms to survive in the pelagic environment. (CO1, K2)

Or

(b) Explain in details about the adaptations of benthic organisms in the intertidal zone. (CO1, K2)

17. (a) Distinguish the concept of an ecosystem structure and function in the marine ecosystem. (CO2, K2)

Or

(b) Interpret the role of primary producers in energy transfer. (CO2, K2)

18. (a) Articulate the concept of carrying capacity in population ecology. (CO3, K3)

Or

(b) Display some density–independent factors that can influence prey-predator relationship. (CO3, K3)

19. (a) Analyze the interplay between the different concepts of niche in influencing the diversity and stability of a specific ecological community. (CO4, K4)

Or

(b) Explain the concepts of fouling and boring communities in relation to marine environments. (CO4, K4)

20. (a) Categorize the different techniques used to assess marine biodiversity. (CO5, K4)

Or

(b) Explain the concept of bio-security in the context of marine biodiversity and provide example. (CO5, K4)

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R0994	Sub. Code
	461202

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Oceanography and Coastal Area Studies

MARINE POLLUTION, ENVIRONMENT AND HEALTH

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option

1. Which of the following pollutants is considered organic? (CO1, K2)

   (a) Lead (b) Benzene

   (c) Mercury (d) Sulfur dioxide

2. Explain the relationship between bioaccumulation and biomagnification. (CO1, K2)

   (a) Bioaccumulation increases contaminant levels; biomagnification does not.

   (b) Biomagnification enhances contaminant levels; bioaccumulation does not.

   (c) Both contribute to higher contaminant levels in top predators.

   (d) Neither influences contaminant concentrations in top predators.

3. Which of these sources of sewage pollution belongs to industrial categories. (CO2, K4)

(a) Industrial: agricultural runoff, paper manufacturing

(b) Industrial: fertilizer, pulp manufacturing

(c) industrial; soap manufacturing, paper manufacturing

(d) industrial: agricultural runoff, soap manufacturing

4. Generate a significant source of pollution in the Mediterranean Sea. (CO2, K4)

(a) Agricultural runoff

(b) Industrial discharges

(c) Marine shipping

(d) Natural processes

5. Distinguish between accidental and deliberate oil spills in terms of their causes and impacts on marine ecosystems. (CO3, K4)

(a) Accidental spills result from sudden events; deliberate discharges are unplanned.

(b) Accidental spills are unplanned; deliberate discharges are intentional.

(c) Accidental spills occur due to human error; deliberate discharges are natural events.

(d) Accidental spills and deliberate discharges share identical causes and consequences.

6. Which of the major sources of pollutant belongs to deliberate categories. (CO3, K4)

(a) Pesticide runoff (b) Oil spills

(c) Minor spills (d) Industrial discharges

7. Classify heavy metals Hg, Pb, Cd, Cu, Zn, and Fe based on their sources in marine and coastal waters. (CO4, K2)

(a) Natural sources: Cu, Hg, Fe

(b) Anthropogenic sources: Cu, Zn. Fe

(c) Industrial sources: Hg, Pb, Cd

(d) Natural sources: Hg, Pb, Cd

8. Classify the ecological effects of heavy metals in marine ecosystems. (CO4, K2)

(a) Direct: Zn coral bleaching; Indirect: Pb algal blooms

(b) Direct: Hg fish mortality; Indirect: Cd eutrophication

(c) Direct: Cu sea grass decline; Indirect: Fe hypoxia

(d) Direct: Zn coral bleaching; Indirect: Cd fish migration

9. Choose the basic prerequisites for quantitating pollution load using indicator organisms in marine monitoring. (CO5, K3)

(a) Size, color, and habitat preference

(b) Reproductive rate, feeding habits, and migratory behavior

(c) Sensitivity, ubiquity, and ease of measurement

(d) Predatory status, lifespan, and genetic diversity.

10. Evaluate the primary role of Non-Governmental Organizations (NGOs) in addressing marine pollution and climate change. (CO5, K3)

(a) Fundraising for research initiatives

(b) Advocacy for policy development

(c) Direct implementation of mitigation measures

(d) Regulation and enforcement of environmental laws

Part B $(5 \times 5 = 25)$

Answer **all** the questions not more than 500 words each.

11. (a) Outline factors contributing to the dispersion of marine pollutants and their influence on contaminant distribution. (CO1, K2)

Or

(b) Summarize the scientific significance of the dilution factor in pollutant concentration. (CO1, K2)

12. (a) Examine the treatment processes for sewage from the paper manufacturing industry and emphasizing the key methods to mitigate environmental impacts. (CO2, K4)

Or

(b) Interpret the pollution aspect of the Pacific Ocean. (CO2, K4)

13. (a) Distinguish methods used to minimize pesticide pollution in marine environments. (CO3, K4)

Or

(b) Interpretate the impact of DDT, on the environment and discuss its bioaccumulation factors in aquatic ecosystems. (CO3, K4)

14. (a) Explain the concept of the Maximum Permissible Dose and its relevance in controlling exposure to heavy metals in marine environments. (CO4, K2)

Or

(b) Outline the present status of coastal pollution in India. (CO4, K2)

15. (a) Explain the impact of global warming in marine ecosystems. (CO5, K3)

Or

(b) Interpret the methods used to minimize red tides in the sea. (CO5, K3)

Part C ($5 \times 8 = 40$)

Answer **all** the questions not more than 1000 words each.

16. (a) Compare BOD and COD as water quality indicators in marine environments, discussing their applications in assessing organic pollution. (CO1, K2)

Or

(b) Express ethical considerations in postgraduate research on marine pollution, and policy development. (CO1, K2)

17. (a) Categories the sources of thermal pollution in the Pacific Ocean and Indian Ocean, discussing the specific challenges and consequences associated with each category. (CO2, K4)

Or

(b) Compare the treatment processes for sewage from the fertilizer manufacturing industry and their efficiency, challenges, and potential innovations. (CO2, K4)

18. (a) Examine the impact of pesticide pollution in the sea and its mitigation strategies. (CO3, K4)

Or

(b) Simplify the mode of poisoning associated with pesticides which affect aquatic organisms and ecosystems. (CO3, K4)

19. (a) Illustrate the beneficial aspects of radiation in the disposal of radioactive wastes, discussing its role in food safety and potential environmental benefits. (CO4, K2)

Or

(b) Summarize the classification and effects of heavy metals in marine and coastal waters. (CO4, K2)

20. (a) Evaluate the strategies for monitoring marine pollution, emphasizing the role of mitigation measures in preserving the health of marine ecosystems. (CO5, K3)

Or

(b) Determine the impact of trace metal pollution on marine biodiversity. (CO5, K3)

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R0995	Sub. Code
	461203

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Oceanography and Coastal Area Studies

APPLICATION OF REMOTE SENSING AND GIS IN OCEANOGRAPHY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option

1. In the electromagnetic spectrum, which type of electromagnetic radiation has the longest wavelength? (CO1, K2)

   (a) Gamma rays (b) X-rays

   (c) Infrared (d) Radio waves

2. Which process describes the conversion of solar energy into heat in the Earths atmosphere? (CO1, K2)

   (a) Refraction (b) Absorption

   (c) Scattering (d) Reflection

3. Which of the following correctly defines an active sensor? (CO2, K3)

(a) A sensor that emits energy and measures the energy reflected or emitted by the target

(b) A sensor that detects the temperature of the target

(c) A sensor that detects naturally occurring energy emitted by the target

(d) A sensor that can detect multiple targets simultaneously

4. What is the main difference between active and passive sensors? (CO2, K3)

(a) Active sensors are more cost-effective than passive sensors

(b) Active sensors emit energy, while passive sensors only detect naturally occurring energy

(c) Active sensors are only used in spaceborne platforms, while passive sensors are used in airborne platforms

(d) Active sensors use radio waves, while passive sensors use visible light

5. What is the purpose of landform identification and evaluation? (CO3, K2)

(a) Mapping landcover types

(b) Evaluating land morphology

(c) Identifying geological features

(d) Assessing agricultural applications

6. Which Earth observation system is known for its high-resolution imaging capability? (CO3, K2)

(a) EROS (b) JERS

(c) SPOT (d) IKONOS

7. Which of the following mapping techniques is NOT based on visual image interpretation? (CO4, K4)

(a) Thermal sensing

(b) Multispectral sensing

(c) Geologic mapping

(d) Hyperspectral sensing

8. Which of the following satellite systems is known for its high temporal resolution? (CO4, K4)

(a) RESURS (b) Lansat series

(c) EROS (d) SPIN

9. Which of the following best defines GIS? (CO5, K4)

(a) Geographic Information System

(b) Geological Information Search

(c) Geological Integration System

(d) Global Information System

10. In the context of GIS, what does DEM stand for? (CO5, K4)

(a) Digital Equation Model

(b) Dynamic Element Mapping

(c) Digital Elevation Model

(d) Diverse Elevation Mapping

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 word each.

11. (a) Summarize the significance of remote sensing in various fields. (CO1, K2)

Or

(b) Examine how does remote sensing utilize the electromagnetic spectrum to gather information? (CO1, K2)

12. (a) Explain in detail about the sensors are and their role in satellite data collection. (CO2, K3)

Or

(b) Distinguish the difference between airborne and spaceborne platforms. (CO2, K3)

13. (a) Summarize the applications of visual image interpretation in agriculture. (CO3, K2)

Or

(b) Show how visual image interpretation can be used in forestry mapping. (CO3, K2)

14. (a) Illustrate the main applications of the Landsat series Earth observation systems. (CO4, K4)

Or

(b) Explain the role of imaging spectrometry systems used in Earth observation. (CO4, K4)

15. (a) Describe the components of a GIS system. (CO5, K4)

Or

(b) Discuss some common problems encountered in image classification. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1000 word each.

16. (a) Illustrate the interaction of electromagnetic energy with vegetation during remote sensing. (CO1, K2)

Or

(b) Distinguish the significance of remote sensing in monitoring water bodies and understanding water quality. (CO1, K2)

17. (a) Describe the aerial photography missions and their purposes. (CO2, K3)

Or

(b) Express how multispectral scanners contribute to remote sensing. (CO2, K3)

18. (a) Outline the key principles of landform identification and evaluation. (CO3, K2)

Or

(b) Classify the techniques involved in soil mapping using visual image interpretation. (CO3, K2)

19. (a) Outline how Global Positioning System (GPS) technology enhance Earth observation systems. (CO4, K4)

Or

(b) Explain the major features and capabilities of the SPOT Earth observation system. (CO4, K4)

20. (a) Describe the principle of image classification in GIS. (CO5, K4)

Or

(b) What is unsupervised image classification and how does it differ from supervised classification? (CO5, K4)

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R0996	Sub. Code
	461204

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Oceanography and Coastal Area Studies

AQUACULTURE

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. A major socio-economic problem associated with coastal aquaculture is: (CO1, K2)

   (a) Overfishing of wild fish for feed in certain farming practices

   (b) Inequitable distribution of benefits among coastal communities

   (c) Environmental degradation due to pollution from aquaculture activities

   (d) All of the above

2. The conservation of natural stock is necessary to: (CO1, K2)

   (a) Exacerbate depletion

   (b) Hinder aquaculture development

   (c) Promote overfishing

   (d) Ensure long-term sustainability

3. Which farming method involves the use of pens and raceways? (CO2, K4)

(a) Vertical farming (b) Organic farming

(c) Hydroponics (d) Aquaculture

4. When designing a rectangular pond for intensive aquaculture, which of the following would NOT be recommended for optimizing water quality and fish health? (CO2, K4)

(a) Creating shallow areas along the edges for feeding and sunlight penetration

(b) Installing a central drain for easy removal of bottom sediments

(c) Constructing a deep section in the center for refuge from thermal stress

(d) Building the dikes with highly permeable soil materials for increased water exchange

5. What are probiotics and prebiotics commonly used for in disease management? (CO3, K4)

(a) Reducing livestock stress

(b) Enhancing gut health

(c) Controlling predators

(d) Improving water quality

6. Which harvesting technique is most suitable for minimizing stress and injury to fish during capture? (CO3, K4)

(a) Draining the pond

(b) Using a seine net

(c) Hand sorting

(d) Using electrical stunning

7. What is the NOT a suitable criterion for selecting broodstock in a fish hatchery? (CO4, K3)

(a) Age and maturity

(b) Disease resistance

(c) High fecundity

(d) Market demand for offspring

8. Which environmental factor is most crucial for successful egg incubation in a prawn hatchery? (CO4, K3)

(a) Light intensity

(b) Salinity level

(c) Temperature

(d) Water flow rate

9. How do Government and Non-Governmental Agencies contribute to the development of aquaculture in India? (CO5, K4)

(a) By implementing policies to regulate fish farming activities

(b) By providing technical assistance to fish farmers

(c) By promoting the use of sustainable aquaculture practices

(d) By establishing fish seed banks for distribution to farmers

10. Which of the following agencies play a crucial role in fisheries development in India? (CO5, K4)

(a) National Fisheries Development Board

(b) All of the above

(c) Non-Governmental Organizations (NGOs)

(d) Ministry of Agriculture

Part B (5 × 5 = 25)

Answer **all** the questions not more than 500 word each.

11. (a) Show how coastal aquaculture contribute to solve socio-economic problems. (CO1, K2)

Or

(b) Illustrate some potential environmental challenges associated with coastal aquaculture. (CO1, K2)

12. (a) Interpret how soil quality affect the success of a farm design and construction project. (CO2, K4)

Or

(b) Simplify the advantages of open sea farming using cages and rafts. (CO2, K4)

13. (a) Examine the key factors that influence the economic viability of an aquaculture farm. (CO3, K4)

Or

(b) Classify the different types of seaweed cultivation. (CO3, K4)

14. (a) Explain the disease prevention and management practices followed in a finfish hatchery. (CO4, K3)

Or

(b) Outline the present status of molluscans culture in Indian hatcheries. (CO4, K3)

15. (a) Evaluate how Fisheries Extensions promote the development of aquaculture in India. (CO5, K4)

Or

(b) Explain in detail about the fish feed formulation technology. (CO5, K4)

Part C ($5 \times 8 = 40$)

Answer **all** the questions not more than 1000 word each.

16. (a) Compare and contrast the potential benefits and challenges of large-scale versus small-scale coastal aquaculture practices. (CO1, K2)

Or

(b) Illustrate the potential consequences of over fishing. (CO1, K2)

17. (a) Evaluate the potential for disease outbreaks in open-sea farming compared to land-based aquaculture. (CO2, K4)

Or

(b) Distinguish a comprehensive monitoring plan for water quality parameters in an earthen pond farming. (CO3, K4)

18. (a) Distinguish the sustainable farm practices for efficient farm management. (CO3, K4)

Or

(b) Examine the economic and social benefits of seaweed culture. (CO3, K4)

19. (a) Interpret the challenges associated with mass production of finfish seeds. (CO4, K3)

Or

(b) Write a short note on induced breeding and its significance. (CO4, K3)

20. (a) Explain the role of FFDA and BFFDA in fisheries development. (CO5, K4)

Or

(b) Interpret the key responsibilities of fish farmers in promoting aquaculture. (CO5, K4)

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R0997	Sub. Code
	461504

M.Sc. DEGREE EXAMINATION, APRIL – 2024

Second Semester

Oceanography and Coastal Area Studies

Elective — COASTAL DISASTER MANAGEMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

Answer **all** the following objective questions by choosing the correct option.

1. What is the primary characteristic of a creeping disaster? (CO1, K2)

   (a) Rapid onset (b) Gradual onset

   (c) Sudden impact (d) Intense magnitude

2. What is the main benefit of disasters? (CO1, K2)

   (a) Loss of biodiversity

   (b) Destruction of ecosystems

   (c) Opportunity for societal adaptation and learning

   (d) Increase in vulnerability

3. Which of the following is a major threat to coastal ecosystems? (CO2, K3)

   (a) Reforestation (b) Habitat loss

   (c) Pollution control (d) Marine protected areas

4. What is the primary factor contributing to fisheries resource depletion? (CO2, K3)

(a) Sustainable fishing practices

(b) Overfishing

(c) Marine protected areas

(d) Habitat restoration

5. What is the primary goal of disaster mitigation? (CO3, K3)

(a) To eliminate all hazards

(b) To reduce the frequency of disasters

(c) To minimize the impact of disasters on human society

(d) To maximize economic profit

6. Which term refers to actions taken to reduce the risks associated with disasters? (CO3, K3)

(a) Disaster management

(b) Disaster mitigation

(c) Disaster relief

(d) Disaster response

7. What is the purpose of vulnerability assessment in disaster management? (CO4, K2)

(a) To determine the likelihood of a disaster occurring

(b) To identify the root causes of disasters

(c) To evaluate the effectiveness of mitigation measures

(d) To identify populations and assets at risk

8. How do disasters disrupt development? (CO4, K2)

(a) By enhancing economic growth

(b) By attracting foreign investment

(c) By interrupting infrastructure projects

(d) By promoting social stability

9. What is a fundamental principle of disaster management? (CO5, K4)

(a) Maximizing economic profit

(b) Minimizing social cohesion

(c) Building community resilience

(d) Ignoring environmental sustainability

10. What are the problems associated with financing and insurance in disaster management? (CO5, K4)

(a) Lack of funds and coverage

(b) Excessive funds and coverage

(c) Easy access to funds

(d) Low demand for insurance

Part B ($5 \times 5 = 25$)

Answer **all** the questions not more than 500 words each.

11. (a) Define natural hazards and explain their importance in understanding disaster risk. (CO1, K2)

Or

(b) Explain the benefits and importance of disasters in shaping human societies and fostering resilience. (CO1, K2)

12. (a) Analyze the major threats to coastal ecosystems. (CO2, K2)

Or

(b) Examine the role of human activities in exacerbating coastal hazards. (CO2, K3)

13. (a) Examine the trends in disaster occurrence. (CO3, K3)

Or

(b) Assess the effectiveness of disaster mitigation measures at different scales. (CO3, K3)

14. (a) Analyze the socio-political destabilization caused by disasters. (CO4, K2)

Or

(b) Discuss the importance of community-based approaches in disaster risk reduction. (CO4, K2)

15. (a) Discuss the importance of training and capacity building in disaster management. (CO5, K4)

Or

(b) Assess the role of early warning systems in disaster preparedness and response. (CO5, K4)

Part C (5 × 8 = 40)

Answer **all** the questions not more that 1000 words each.

16. (a) Explore the importance of community resilience and preparedness in mitigating disaster impacts. (CO1, K2)

Or

(b) Discuss the factors that contribute to the transformation of natural hazards into disasters. (CO1, K2)

17. (a) Discuss the importance of integrated coastal zone management. (CO2, K3)

Or

(b) Describe the causes and effects of cyclones on coastal regions and evaluate disaster relief and management strategies in cyclone-prone areas. (CO2, K3)

18. (a) Discuss the concept of disaster mitigation and explain the importance of taking proactive measures to reduce disaster risks. (CO3, K3)

Or

(b) Analyze the mitigation actions available to policy makers and practitioners, and evaluate their effectiveness in reducing vulnerability to environmental hazards. (CO3, K3)

19. (a) Explain the relationship between nature, humanity and development and discuss how disasters disrupt development processes. (CO4, K2)

Or

(b) Evaluate the impact of disasters on resources, programs and investments and discuss strategies for building resilience and reducing vulnerability. (CO4, K2)

20. (a) Discuss the concept of geohazards and evaluate the challenges of financing and insuring against natural disasters. (CO5, K4)

Or

(b) Analyze trends in climatology, meteorology and hydrology and discuss their implications for disaster risk management. (CO5, K4)

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