R0174	Sub. Code
	461101

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Oceanography and Coastal Area Studies

GEOLOGICAL 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. Which one of the following figures represents the age of the earth? (CO1, K2)
   (a) 4.6 million years (b) 13.7 billion years
   (c) 4.6 billion years (d) 13.7 trillion years

2. Which one of the following is modern theory to explain the origin and evolution of the earth? (CO1, K2)
   (a) Nebular Hypothesis
   (b) Two stars theory
   (c) Big bang theory
   (d) Plate Tectonic theory

3. Which of the following figure represents the formation of oceans and continents on the earth? (CO1, K2)
   (a) 3,800-4,800 Million
   (b) 2,500-3,800 Million
   (c) 570-2,500 Million
   (d) 438-505 Million

4. Thickness of the crust of the Earth is (CO2, K2)

(a) 0-500 km (b) 0-400 km

(c) 0-60 km (d) 0-250 km

5. What is the major focus of geological oceanography? (CO2, K2)

(a) Formation of the seafloor

(b) Formation of sea Mount

(c) Formation of sea volcano

(d) All of the above

6. A sloping area which lies between shoreline and continental slope is known as (CO3, K1)

(a) Trenches (b) Continental self

(c) Continental rise (d) Continental break

7. Pelagic sediments consist ————. (CO3, K1)

(a) Reddish-brown clays derived from the continents

(b) Foraminiferal oozes

(c) Silica oozes

(d) All of these

8. Black smokers are enriched in ————. (CO4, K2)

(a) Carbon dioxide and metals

(b) Dissolved hydrogen sulfide and metals

(c) Oxygen and metals

(d) Nitrogen and metals

9. Beach placers in India are an important source of (CO5, K6)

(a) Copper (b) Lead

(c) Thorium (d) Uranium

10. The method of particle size measurement is ————————. (CO5, K6)

(a) Sieve analysis
(b) Microscopic examination
(c) Sedimentation analysis
(d) All of these

Part B (5 × 5 = 25)

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

11. (a) Describe about Big bang theory. (CO1, K2)

Or

(b) Draw and label earth layers and describe about it. (CO1, K2)

12. (a) Describe about igneous rock formation. (CO2, K2)

Or

(b) Write note on the chemical weathering. (CO2, K6)

13. (a) How waves behave in shallow water? (CO3, K6)

Or

(b) Discuss about the types of sediment transportation. (CO2, K5)

14. (a) What are the different dating methods and explain about it? (CO4, K5)

Or

(b) Write note on physical property of particles. (CO4, K5)

15. (a) Explain about hydrocarbon resources. (CO5, K6)

Or

(b) Write about origin of evaporates and its distribution. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1,000 words each.

16. (a) Describe in detail about plate tectonic theory. (CO1, K2)

Or

(b) Write essay on geological time scale and it life forms. (CO1, K2)

17. (a) Explain in detail about various weathering process. (CO2, K6)

Or

(b) Explain about different types of marine sediments. (CO2, K4)

18. (a) Write an essay on coastal geomorphology of India. (CO3, K5)

Or

(b) Draw the submarine features and label it also discuss about the features. (CO4, K2)

19. (a) Explain in detail about major coastal deposits and land forms. (CO4, K5)

Or

(b) How do you use sedimentary data for environmental studies? (CO4, K4)

20. (a) Write about origin, distribution and significance of manganese nodules. (CO5, K5)

Or

(b) Explain about Gravity. Magnetic and Seismic methods and its uses in deep sea exploration. (CO5, K5)

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R0175	Sub. Code
	461102

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Oceanography and Coastal Area Studies

PHYSICAL 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. Who is the father of oceanography? (CO1, K2)

   (a) Matthew Fontaine Maury

   (b) James Hutton

   (c) Alfred Wegener

   (d) Heary Piddingto

2. When did titanic accident happen? (CO1, K2)

   (a) 12 April 1914 (b) 12 April 1912

   (c) 14 April 1912 (d) 14 March 1914

3. The highest point of a wave is called the (CO1, K3)

   (a) Wavelength (b) Trough

   (c) Wave height (d) Crest

4. Surface currents formed by (CO2, K2)

(a) Increased water density

(b) Global winds

(c) The moon's gravity

(d) The sun's gravity

5. Ocean temperatures increase more slowly than land temperatures because of the larger effective ———— of the oceans. (CO2, K2)

(a) Heat capacity (b) Heat balance

(c) Heat transfer (d) Heat exchanger

6. Salinity becomes one of the factors for forming (CO3, K2)

(a) Waves (b) Tide

(c) Current (d) None of the above

7. Hurricane is the name of cyclone in (CO3, K3)

(a) American continent

(b) Japan

(c) Both (a) and (b)

(d) None of these

8. The west coast of India is (CO4, K2)

(a) less vulnerable to cyclonic storms

(b) more vulnerable to cyclonic storms

(c) not vulnerable to cyclonic storms

(d) none of these

9. Which one of the following activities contributed maximum to the global warming? (CO5, K6)

(a) Industrial processes

(b) Deforestation

(c) Agriculture

(d) Fossil fuel combustion

10. How much has the global sea level rise between 1901 and 2010? (CO5, K2)

(a) 1 cm (b) 10 cm

(c) 19 cm (d) 100 cm

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

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

11. (a) List out oceanographic research institutes in India and it contributions. (CO1, K2)

Or

(b) Describe about HMS challenger expedition and it findings. (CO1, K3)

12. (a) Explain about of formation of ocean waves and its behaviour. (CO2, K2)

Or

(b) Explain the process of coastal upwelling. (CO2, K2)

13. (a) Write a note on Chilika Lake. (CO3, K2)

Or

(b) Write a note on the vertical distribution of temperature. (CO3, K1)

14. (a) Describe about Indian climate. (CO3, K2)

Or

(b) Discuss about formation of tropical cyclone. (CO4, K2)

15. (a) Give an account on sea-level changes on shoreline. (CO5, K5)

Or

(b) Explain the El Nine and La Nina. (CO5, K2)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1,000 words each.

16. (a) Write an essay on development of oceanography in recent past. (CO1, K6)

Or

(b) Describe in detail about modern development in ocean Science. (CO1, K2)

17. (a) Describe in detail about surface ocean currents. (CO2, K2)

Or

(b) Give an account on different types waves. (CO2, K2)

18. (a) Write an essay on ocean salinity and its distribution pattern in the world ocean. (CO3, K2)

Or

(b) Write about radiation balance of earth atmosphere. (CO3, K2)

19. (a) Describe in detail about general circulation pattern of atmosphere. (CO4, K2)

Or

(b) Give an account on types of cloud. (CO4, K2)

20. (a) Write an essay on southern oscillation. (CO5, K3)

Or

(b) Give an account global warming impact on marine environment. (CO5, K5)

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R0176	Sub. Code
	461103

M.Sc DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Oceanography and Coastal Area Studies

CHEMICAL 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. Which one of the following factors Influence the ocean salinity? (CO2, K2)

   (a) Land (b) River

   (c) Wind (d) Current

2. The HMS Challenger expedition was conducted during the year (CO1, K2)

   (a) 1824-1828 (b) 1838-1842

   (c) 1872-1876 (d) 1854-1860

3. What is the average salinity of ocean water? (CO2, K2)

   (a) 25 ppt (b) 30 ppt

   (c) 35 ppt (d) 40 ppt

4. As seawater temperature decrease, its density _____. (CO2, K2)

   (a) Decrease (b) Increase

   (c) Remains same (d) Non of the above

5. Salinity of seawater is calculated as the amount of salt (in gm) dissolved in ———— gm of seawater. (CO3, K3)

(a) 100 gm

(b) 1000 gm

(c) 10000 gm

(d) Non of the above

6. The percentage of chlorine in the seawater is (CO4, K5)

(a) 0.07 % (b) 0.55 %

(c) 0.65 % (d) 0.75 %

7. Which of the following is not a biogeochemical cycle? (CO3, K2)

(a) Oxygen cycle (b) Carbon cycle

(c) Nitrogen cycle (d) Ozone cycle

8. The nutrient cycle is otherwise called as (CO4, K2)

(a) Atmospheric cycle

(b) Ecological recycling

(c) Water cycle

(d) Non of the above

9. Denitrification is happened in ———— condition. (CO5, K1)

(a) Aerobic (b) Humid

(c) Cold (d) Anaerobic

10. ——— cycle dose not have a gaseous state. (CO5, K2)

(a) Oxygen (b) Nitrogen

(c) Phosphorus (d) Carbon

Part B (5 × 5 = 25)

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

11. (a) Describe dissolved gases in seawater. (CO1, K2)

Or

(b) Write about the history and development of oceanographic institution in India. (CO1, K2)

12. (a) Give an account on hydrothermal vents. (CO2, K2)

Or

(b) Explain about BOD and COD. (CO2, K5)

13. (a) Explain about marine non-living resources. (CO3, K5)

Or

(b) Compare and contrast-Oxidation and reduction. (CO3, K4)

14. (a) What are the significance of nutrients in seawater? (CO4, K2)

Or

(b) Describe about the nitrogen cycle. (CO4, K2)

15. (a) Write a short note on marine organic matter. (CO5, K2)

Or

(b) Describe about the distribution of petroleum hydrocarbon in ocean. (CO5, K2)

Part C (5 × 8 = 40)

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

16. (a) Write a details account on the history and development of chemical oceanography. (CO1, K2)

Or

(b) Explain about the major International India Ocean Expeditions (IIOE). (CO1, K2)

17. (a) Describe in details – salinity and chlorinity of seawater. (CO2, K5)

Or

(b) Give detailed notes on noble gases and their origin and distribution. (CO2, K2)

18. (a) Describe the major and minor element in seawater. (CO3, K2)

Or

(b) Write an essay in exploration of manganese nodules. (CO3, K2)

19. (a) Write an essay on seasonal variations of nutrient cycle in seawater. (CO4, K2)

Or

(b) Explain in details with illustration — "carbon cycle". (CO4, K2)

20. (a) Write an account on dissolved organic matter. (CO5, K2)

Or

(b) Describe about the estimation of DOM and POM. (CO5, K5)

———————

R0177	Sub. Code
	461104

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Oceanography and Coastal Area Studies

BIOLOGICAL 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. The plankton that lives at the surface of water bodies is known as (CO1, K1)

   (a) Benthoplankton

   (b) Neuston

   (c) Pleuston

   (d) Nekton

2. Meroplankton refers to organisms that (CO1, K2)

   (a) Float on the water's surface

   (b) Live in the benthic zone

   (c) Spendonly part of their life as plankton

   (d) Spend whole life as plankton

3. The red tide phenomenon is mainly caused by an overgrowth of which organisms? (CO2, K6)

(a) Diatoms (b) Cyanobacteria

(c) Dinoflagellates (d) Green Algae

4. Which adaptation helps certain zooplankton to feed efficiently on phytoplankton? (CO2, K2)

(a) Spiky exoskeleton

(b) Filter-feeding appendages

(c) Light-emitting organs

(d) Pseudopodia

5. The light and dark bottle method is used to estimate (CO3, K5)

(a) Secondary production rates

(b) Decomposition rates in sediments

(c) Light penetration depth in water columns

(d) Rate of photosynthesis and respiration in water bodies

6. In regions with constant light availability, primary production is often limited by (CO3, K5)

(a) Light intensity (b) Nutrient availability

(c) Water depth (d) Water movement

7. Which of the following seaweeds is commercially important for agar production? (CO4, K2)

(a) Gracilaria (b) Fucus

(c) Sargassum (d) Ulva

8. The relationship between coral polyps and the algae (zooxanthellae) living in their tissues is best described as (CO4, K1)

(a) Parasitism (b) Commensalism

(c) Competition (d) Mutualism

9. Which of the following plant adaptations is most commonly found in salt marshes to deal with high salt concentrations? (CO5, K1)

(a) Salt secretion glands

(b) Deep taproots

(c) Thick waxy cuticles

(d) Tendrils for climbing

10. Plants in salt marshes often exhibit which of the following physiological adaptations? (CO5, K5)

(a) C4 photosynthesis

(b) C3 photosynthesis

(c) Photorespiration

(d) CAM photosynthesis

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

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

11. (a) Elaborate on the displacement method used for plankton volume estimation. (CO1, K5)

Or

(b) Differentiate between Neuston and Pleuston. (CO1, K2)

12. (a) Discuss the primary effects of the red tide phenomenon on marine ecosystems. (CO2, K6)

Or

(b) Elaborate on how zooplankton adapts to avoid predation in aquatic environments. (CO2, K2)

13. (a) Examine how regional variations in environmental factors affect the secondary production. (CO3, K5)

Or

(b) Analyse the influence of nutrient availability on primary production. (CO3, K5)

14. (a) Outline the distribution patterns of seaweeds in India. (CO4, K2)

Or

(b) Investigate the importance of morphological and anatomical adaptation of seagrasses to submerge in the marine environment. (CO4, K2)

15. (a) Discuss the conservation challenges faced by sand dune habitats. (CO5, K5)

Or

(b) Explain the ecological role of mud flat vegetation in coastal ecosystems. (CO5, K6)

Part C (5 × 8 = 40)

Answer **all** the questions not more than 1,000 words each.

16. (a) Discuss the various methods of plankton collection and highlight the advantages and disadvantages. (CO1, K5)

Or

(b) Distinguish the habitat-based classification of plankton and explain how each habitat influence the behaviour and morphology of the residing plankton. (CO1, K2)

17. (a) Discuss the relationship between coral polyps and certain species of phytoplankton and describe the potential vulnerabilities. (CO2, K2)

Or

(b) Summarize the critical role of plankton in marine food web. (CO2, K2)

18. (a) Compare the methods of estimation of primary production. (CO3, K5)

Or

(b) Examine the various factors affecting the primary and secondary production. (CO3, K3)

19. (a) Distinguish the ecological and economic importance of coral reef ecosystem. (CO4, K2)

Or

(b) Examine the life cycles of commercially important seaweeds. (CO4, K5)

20. (a) Describe the primary morphological and anatomical features of salt marsh plants that help them survive in saline environments. (CO5, K2)

Or

(b) Outline the uses and economic importance of vegetation from salt marshes, mud flats and sand dunes. (CO5, K2)

———————

R0178	Sub. Code
	461503

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

First Semester

Oceanography and Coastal Area Studies

Elective : MARINE RESOURCES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

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

1. Which region typically contains the richest deposits of oil and natural gas? (CO1, K2)

   (a) Abyssal plains (b) Continental slope

   (c) Continental shelf (d) Oceanic ridges

2. Which type of resource is primarily derived from the erosion of land and its transportation by rivers to the sea? (CO1, K5)

   (a) Terrigenous (b) Biogenous

   (c) Allogenic (d) Chemogenous

3. The west coast of India is primarily known for the presence of which placer mineral. (CO2, K2)

   (a) Gold (b) Monazite

   (c) Uranium (d) Zinc

4. The term 'Sea baulk" primarily refers to (CO2, K2)

   (a) Unexplored marine organisms

   (b) Discarded fishing equipment

   (c) Oceanic wastes

   (d) Unused marine non-living resources

5. The primary reason for the decline in fish production in the Indian EEZ is: (CO3, K2)

(a) Introduction of exotic species

(b) Increased sea temperatures

(c) Overfishing and unsustainable practices B

(d) Lack of fishery education

6. The primary method employed to catch sardines in large numbers is: (CO3, K1)

(a) Trawling (b) Purse seining

(c) Longlining (d) Handlining

7. Which of the following marine organisms has been a prominent source of bioactive compounds used in drug discovery? (CO4, K6)

(a) Seagrasses (b) Marine sponges

(c) Sea birds (d) Whales

8. Cephalosporins, a class of antibiotics, were originally derived from: (CO4, K2)

(a) A marine alga (b) A deep-sea sponge

(c) A coral reef fish (d) A marine fungus

9. Which of the following marine creatures is notorious for producing tetrodotoxin? (CO5, K6)

(a) Pufferfish (b) Clownfish

(c) Great white shark (d) Blue whale

10. The venom of which marine creature can lead to symptoms like muscle pain, paralysis, and even death in severe cases. (CO5, K2)

(a) Sea urchin (b) Clownfish

(c) Stonefish (d) Seahorse

Part B (5 × 5 = 25)

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

11. (a) Classify the non-living resources of ocean based on their location. (CO1, K2)

Or

(b) Distinguish between terrigenous and chemogenous resources. (CO1, K2)

12. (a) Compare the marine mineral potential of the east coast to the west coast of India. (CO2, K6)

Or

(b) Simplify the concept and importance of marine phosphorites. (CO2, K2)

13. (a) Classify the main types of fish resources found within the Indian Exclusive Economic Zone. (CO3, K2)

Or

(b) Compare the indigenous and modern crafts and gears used in the exploitation of sea fishes. (CO3, K1)

14. (a) Simplify the concept of marine drugs, highlighting their significance in modern medicine. (CO4, K6)

Or

(b) Distinguish the marine drugs derived from carbohydrate and nitrogenous compounds. (CO4, K6)

15. (a) Distinguish between marine-derived toxins and venoms. (CO5, K1)

Or

(b) Simplify the concept of marine steroids and describe their primary types found in marine organisms. (CO5, K2)

Part C (5 × 8 = 40)

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

16. (a) Compare and contrast allogenic and antigenic resources in terms of their formation processes and importance in marine environments. (CO1, K2)

Or

(b) Interpret the significance of integrated resource management in ensuring the sustainable use of marine non-living resources. (CO1, K2)

17. (a) Distinguish the various methods used to explore the seafloor mineral deposits. (CO2, K2)

Or

(b) Examine the importance and challenges of exploring placer minerals and discuss their economic significance. (CO2, K5)

18. (a) Examine the current state of fishery resource management in India and discuss both its successes and challenges. (CO3, K2)

Or

(b) Simplify the concept of profitable vessel management and explain its importance. (CO3, K2)

19. (a) Categories the various antibiotic compounds derived from marine animals based on their mode of action and targeted pathogens. (CO4, K6)

Or

(b) Examine the ecological implications of extracting bioactive compounds from marine environments and discuss the potential consequences on marine biodiversity. (CO4, K2)

20. (a) Interpret the significance of marine carotenoids and describe its potential industrial applications. (CO5, K5)

Or

(b) Examine the importance and potential applications of marine-derived toxins in medicine and pharmacology. (CO5, K6)

R0179	Sub. Code 461301

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Oceanography and Coastal Area Studies

FISH AND FISHERIES

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10× 1 = 10)

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

1. Maintaining and protecting of animals in their natural habitats is called (CO1, K2)

   (a) Ex-situ conservation

   (b) Ranching

   (c) In-situ conservation

   (d) Harvesting

2. Which of the following fish is associated with sports and games? (CO1, K1)

   (a) Tuna

   (b) Salmon

   (c) Shirmp

   (d) Sardines

3. The term describes the numbers of eggs produced by a female fish is (CO2, K2)

(a) Brooder (b) Fecundity

(c) Viviparity (d) Gonado-Somatic Index

4. The condition factors K of a fish related to ———— of fish biology (CO2, K1)

(a) Food and feeding

(b) Reproduction

(c) Age and growth

(d) Fecundity

5. ———— control measures set a maximum limit on the quantity of a fish that can be caught in a give time (CO3, K3)

(a) Licensing

(b) Closed fishing areas

(c) Catch Quotas

(d) Size limitation on nets

6. Which of the following is a primary goal of Magnuson-Stevens Fisheries Conservation Management Act in the United States (CO3, K2)

(a) To promote unrestricted fishing practices

(b) To promote endangered marine species

(c) To prevent over fishing and conserve fishery resources

(d) To promote international fisheries cooperation.

7. What type of fishing gear is know for its environmental impact due to its tendency to entangle and capture non-target species, including marine mammals and birds? (CO4, K2)

(a) Trawl net

(b) Purse seine net

(c) Drift net

(d) Longline

8. Which type of fishing gear is designed to capture fish by surrounding them with a net and then closing the bottom of the net to trap the fish? (CO4, K5)

(a) Trawl net

(b) Gill net

(c) Longline

(d) Seine net

9. How do protected areas, mangroves, sanctuaries, and parks impact fisher communities? (CO5, K1)

(a) They provide additional fishing opportunities

(b) They do not affect fisher communities.

(c) They can restrict access to traditional fishing grounds

(d) They promote overfishing.

10. What are the mechanisms and modes of extension typically used to educated fishers and improve their practices? (CO5, K5)

(a) Imposing fines and penalties.

(b) Distributing free fishing gear.

(c) Training and workshops.

(d) Promoting fishing in protected areas

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

Answer **all** the questions, not more then 500 words each.

11. (a) Explain target and non target fisheries of the Indian sub-continent. (CO1, K5)

Or

(b) Demonstrate in situ and ex-situ conservation for protecting fisheries. (CO1, K2)

12. (a) Elaborate reproductive biology of salmon fish and catfish. (CO2, K6)

Or

(b) Discuss condition Factor and Gonado-somatic Index. (CO2, K5)

13. (a) Summarize the International fishery regulation and treaties. (CO3, K1)

Or

(b) List out Bycatch Reduction Devices application in fisheries. (CO3, K4)

14. (a) Define input control measure of fisheries management. (CO4, K1)

Or

(b) Discuss the selectivity of fishing gears. (CO4, K5)

15. (a) Examine remote sensing application in CZM. (CO5, K4)

Or

(b) Infer the role of extension in fisheries. (CO5, K2)

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

Answer **all** the questions, not more then 1000 words each.

16. (a) Discuss major global trends in the production of fisheries resources. (CO1, K6)

Or

(b) Analyse the dynamics of fishery resources and tier economic importance. (CO1, K4)

17. (a) Explain the feeding habits of fishes by their feed composition. (CO2, K5)

Or

(b) Define the concept of maximum sustainable and economic yield. (CO2, K1)

18. (a) Examine the concept and principles of fisheries management. (CO3, K4)

Or

(b) Interpret the role of UNCLOS and FAO Code of Conduct for fisheries. (CO3, K5)

19. (a) List the different types of craft and gear and explain in details. (CO4, K4)

Or

(b) Infer the modern techniques and equipment in fishing. (CO4, K2)

20. (a) Justify education can promote fishermen to save protected areas. (CO5, K5)

Or

(b) Identify alternate livelihood options for fishers. (CO5, K3)

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R0180	Sub. Code
	461302

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Oceanography and Coastal Area Studies

POST – HARVEST TECHNOLOGY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 1 = 10)$

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

1. The purpose of refrigerated seawater in fish preservation is to (CO1, K2)

   (a) Enhancing fish flavor

   (b) Reducing fish weight

   (c) Slowing down fish metabolism

   (d) Preventing fish dehydration

2. In fish processing, the term "dressing" refers to (CO1, K1)

   (a) Removing the scales from fish

   (b) Filleting fish into smaller pieces

   (c) Cleaning and gutting fish

   (d) Adding spices and seasonings to fish

3. Which of the following chemical changes occurs during post-mortem fish processing that can result in the formation of off-flavors? (CO2, K3)

(a) Lipid oxidation

(b) Protein denaturation

(c) Nucleotide degradation

(d) pH increase

4. The main purpose of primary treatment in fish processing is to (CO2, K5)

(a) Enhance flavor (b) Remove parasites

(c) Extend shelf life (d) Reduce bacterial load

5. The purpose of adding antioxidants to fishery products during processing is (CO3, K2)

(a) To enhance flavor (b) To extend shelf life

(c) To improve texture (d) To increase protein content

6. The chemical treatment is often used to prevent enzymatic browning in seafood Products are (CO3, K2)

(a) Acidification (b) Smoking

(c) Blanching (d) Irradiation

7. The development of protective packaging for fishery products primarily aims (CO4, K4)

(a) To reduce packaging costs

(b) To minimize environmental impact

(c) To improve product safety and quality

(d) To enhance product marketing

8. The factor must be considered to comply with standards and regulations during designing and packing is(CO4, K5)

(a) Packaging aesthetics

(b) Cultural preferences

(c) Language translation

(d) Legal and safety requirements

9. Which one of the microbiological parameters is commonly used to assess seafood safety and quality? (CO5, K1)

(a) Total plate count

(b) pH level

(c) Free fatty acid content

(d) Moisture content

10. National and international standards for seafood quality are primarily developed to (CO5, K4)

(a) Promote competition in the seafood industry

(b) Reduce seafood waste

(c) Facilitate trade negotiations

(d) Ensure consistent product quality and safety

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

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

11. (a) Explain the role of ice in handling, transportation, and processing of fish. (CO1, K2)

Or

(b) Examine the use of refrigerated seawater for fish preservation. (CO1, K4)

12. (a) Discuss the chemical changes in lipids during fish processing. (CO2, K6)

Or

(b) Explain the factors affecting the quality of fish. (CO2, K5)

13. (a) Elaborate the role of cryoprotectants in the freezing process of fish and fishery products. (CO3, K6)

Or

(b) Define the steps involved in the processing of crustaceans and cephalopods. (CO3, K1)

14. (a) Summarize the significance of packaging materials in the preservation and marketing of fishery products. (CO3, K2)

Or

(b) Compare and contrast the packaging requirements for fresh fish and frozen fish. (CO4, K4)

15. (a) Analyze the importance of quality assessment in fish and fishery products. (CO4, K4)

Or

(b) Explain Good Manufacturing Practices (GMP) in the seafood industry. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Compare and contrast the handling and processing techniques for different types of fish. (CO1, K4)

Or

(b) Explain the role of quality control and quality assurance in the fish processing industry. (CO1, K2)

17. (a) Analyze the impact of post-modern changes on the quality and shelf life of fish products. (CO2, K4)

Or

(b) Discuss pre-treatment processes involved in fish processing. (CO2, K6)

18. (a) Explain the impact of processing and packaging methods on the quality and shelf life of frozen fish and fishery products. (CO3, K2)

Or

(b) Assess the concept of quality control in the context of both fresh and processed fish and fishery products. (CO3, K5)

19. (a) Demonstrate the manufacturing processes involved in producing basic films and laminates for packaging fishery products. (CO4, K2)

Or

(b) Examine the packaging standards and requirements for international trade in fishery products. (CO4, K4)

20. (a) Discuss quality standards used for assessment in fishery products. (CO5, K5)

Or

(b) Distinguish the seafood quality standards and regulations of Codex Alimentarius, USFDA, and the EU (CO5, K4)

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R0181	Sub. Code
	461303

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Oceanography and Coastal Area Studies

OCEAN 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 main cause of sea level rise? (CO1, K6)
   (a) Glacier melts
   (b) Ocean expansion
   (c) Both glacier melt and ocean expansion
   (d) Deforestation

2. International coastal clean-up day we celebrate on (CO1, K2)
   (a) Third Saturday of September
   (b) First Saturday of September
   (c) First week of September
   (d) First Week of June

3. Rising levels of atmospheric carbon dioxide will cause which of the following changes in oceanic chemistry. (CO1, K6)
   (a) Increased salinity
   (b) Decreased pH
   (c) Increased precipitation of calcium carbonate
   (d) Decreased salinity

4. Which country has the largest exclusive economic zone? (CO2, K1)

(a) India (b) China
(c) USA (d) France

5. The largest estuarine mangrove forest in the world located is at (CO2, K2)

(a) Sundarbans National park
(b) Nanda Devi and Valley of Flower National Parks
(c) Keoladeo National Park
(d) Manas Wildlife Sanctuary

6. International Maritime organization is concerned with (CO3, K2)

(a) Air pollution
(b) Shipping regulation
(c) Adulteration in sea food
(d) Deforestation

7. What is the name for a zone where temperature rapidly changes with depth? (CO4, K2)

(a) Thermohaline (b) Thermocline
(c) Pycnocline (d) Halocline

8. Which of the following is not a greenhouse gas? (CO5, K6)

(a) Carbon di-oxide (b) Methane
(c) Nirous oxide (d) Carbon monoxide

9. The El-Nino Phenomenon occurs in (CO5, K2)

(a) Atlantic Ocean (b) Pacific Ocean
(c) Indian Ocean (d) Arctic Ocean

10. What is the IPCC? (CO5, K2)

(a) A government agency that promotes fossil fuel use
(b) An organization that promotes climate change denial
(c) A scientific panel that provides unbiased climate change information
(d) Renewable energy companies

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

Answer all the questions not more than 500 words each.

11. (a) Describe about Indian EEZ. (CO1, K2)

Or

(b) Discuss about shorefront constructions. (CO1, K6)

12. (a) How many coastal regions are there in India and discuss about it? (CO2, K2)

Or

(b) Write a note on mariculture. (CO2, K5)

13. (a) Discuss the monitoring strategies of marine pollution. (CO3, K6)

Or

(b) Write a note on Gulf of Mannar Marine Natural Park. (CO3, K1)

14. (a) Write detailed note on human impacts on the coastal zone. (CO4, K5)

Or

(b) Discuss why marine biodiversity is unique. (CO5, K2)

15. (a) Discuss about types of estuaries. (CO5, K2)

Or

(b) Give an account on effect of port activities and coastal pollution on various coastal ecosystems. (CO5, K6)

Part C (5 × 8 = 40)

Answer all the questions not more than 1000 words each.

16. (a) Write an essay on national and global problem in coastal zone. (CO1, K2)

Or

(b) Describe in detail about depletion of fisheries resource. (CO1, K5)

17. (a) Write in detail note on "Coastal zone Management Issue, CRZ, Integrated coastal zone Management." (CO2, K2)

Or

(b) Give an account on marine fisheries management policies. (CO2, K2)

18. (a) List National and International Agencies and Organization for Ocean Management and its role. (CO3, K1)

Or

(b) Write an essay on Indian national marine biosphere reserve. (CO3, K2)

19. (a) Write a detailed note on major coastal marine ecosystem. (CO3, K1)

Or

(b) Give an account global warming impact on marine environment. (CO4, K5)

20. (a) How do we monitor coastal and marine ecosystem? (CO5, K2)

Or

(b) Write an essay on natural hazards. (CO5, K6)

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R0182	Sub. Code
	461304

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Oceanography and Coastal Area Studies

RESEARCH METHODOLOGY

(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. The main focus of assessing primary productivity in animals is (CO1, K2)
   (a) Carbon cycling
   (b) Secondary productivity
   (c) Biodiversity conservation
   (d) Predation dynamics
2. Which of the following methods is commonly used to estimate the age of fish? (CO1, K1)
   (a) DNA sequencing (b) Radiocarbon dating
   (c) Otolith analysis (d) Behavioral observation
3. ———————— property of molecules allows them to emit fluorescent light (CO2, K4)
   (a) Absorption of light
   (b) Emission of electrons
   (c) Absorption of electrons
   (d) Absorption of photons

4. Which of the following is a histochemical method used to detect the presence of lipids in tissue samples? (CO2, K1)

(a) Periodic acid-Schiff (PAS) staining

(b) Masson's trichrome staining

(c) Sudan Black staining

(d) Wright-Giemsa staining

5. Which among the spectroscopic techniques is commonly used to determine the concentration of metal ions in a solution? (CO3, K1)

(a) Spectrofluorometer

(b) Flame photometer

(c) Atomic absorption spectrophotometer

(d) NMR spectrometer

6. The main function of ion-selective electrodes in pH measurement is to a membrane is called (CO3, K2)

(a) Measure the concentration of hydrogen ions

(b) Measure the concentration of hydroxide ions

(c) Measure the concentration of specific ions

(d) Measure the electrical conductivity of the solution

7. Which statistical test is used to determine if there is a significant difference between the means of two independent groups with unequal variances? (CO4, K1)

(a) Chi-square test (b) Student's t-test

(c) ANOVA (d) Mann-Whitney U test

8. ———————— file format is commonly used to store protein structure data (CO4, K4)

(a) FASTA (b) BLAST

(c) PDB (d) CSV

9. What is the purpose of abstracting in the context of research papers? (CO5, K1)

(a) To write a summary of the entire paper

(b) To provide a brief description of the paper's content

(c) To generate keywords for the paper

(d) To list the author's credentials

10. The purpose of the "Discussion" section of a research paper is (CO5, K3)

(a) To repeat the results

(b) To speculate on the implications of the results

(c) To list all the references

(d) To provide a summary of the methods used

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

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

11. (a) Demonstrate laboratory culture of diatoms. (CO1, K2)

Or

(b) Define the method for estimation of breeding periodicity in animals. (CO1, K1)

12. (a) Illustrate the principle and application of phase contrast microscopy. (CO2, K2)

Or

(b) Recommend the methods for determination of proximate analysis of food. (CO2, K5)

13. (a) Discuss the NMR techniques. (CO3, K6)

Or

(b) Examine the electrophoresis techniques and their applications. (CO3, K4)

14. (a) Explain the sources of biological data. (CO4, K5)

Or

(b) List the search engines in bioinformatics and their applications. (CO4, K4)

15. (a) Justify the significance of the abstract in a manuscript. (CO5, K4)

Or

(b) Discuss the preparation of slides for presentation. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Explain the assessing primary productivity in animals. (CO1, K2)

Or

(b) Elaborate culture methods of fish fishes. (CO1, K6)

17. (a) Illustrate the working mechanism of SEM and its applications. (CO2, K2)

Or

(b) Explain the methods involved in histological sectioning. (CO2, K5)

18. (a) Discuss the working principle of AAS and its limitations. (CO3, K6)

Or

(b) Justify PCR is a potential tool for DNA amplification. (CO3, K5)

19. (a) List the degrees of correlation. (CO4, K1)

Or

(b) Identify different biological databases their applications. (CO4, K3)

20. (a) Compare the writing methods between the review and research article. (CO5, K4)

Or

(b) Define E-journals and their application. (CO5, K5)

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R0183	Sub. Code
	461505

M.Sc. DEGREE EXAMINATION, NOVEMBER – 2023

Third Semester

Oceanography and Coastal Area Studies

Elective : MARINE BIOFOULING, PREVENTION AND 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. The corrosion occurs due to contact of two dissimilar metals in the presence of an electrolyte is known as (CO1, K2)

   (a) Pitting corrosion

   (b) Galvanic corrosion

   (c) Stress corrosion cracking

   (d) Crevice corrosion

2. Which corrosion testing method exposes a metal to a corrosive environment under controlled conditions, often simulating real-world conditions? (CO1, K1)

   (a) Weight loss method

   (b) Cyclic polarization

   (c) Salt spray testing

   (d) Both (a) and (c)

3. The main mechanism of bioflim formation on submerged surfaces is (CO2, K2)

(a) Mechanical bonding

(b) Electrostatic attraction

(c) Chemical precipitation

(d) Microbial adhesion

4. Which of the following factors is influencing the biofouling growth that is related to the geographical location of a structure? (CO2, K1)

(a) Water current (b) Temperature

(c) Water quality (d) Depth

5. Biofilms in biofouling communities are primarily composed of (CO3, K4)

(a) Macro-fouling organisms

(b) Mobile communities

(c) Microorganisms

(d) Parasitic organisms

6. What is the primary activity of sulfate-reducing bacteria (SRB) in biocorrosion? (CO3, K1)

(a) Metal reduction (b) Biofilm formation

(c) Slime production (d) Acid production

7. Biofouling on fishing and diving equipment can lead to (CO4, K3)

(a) Increased equipment durability

(b) Enhanced underwater visibility

(c) Operational inefficiencies

(d) Reduced marine biodiversity

8. Economic losses caused by biocorrosion primarily result from (CO4, K2)

(a) Increased Fuel efficiency

(b) Extended equipment lifespan

(c) Maintenance and repair costs

(d) Reduced biodiversity

9. The method commonly used for biofouling cleaning on ship hulls is (CO5, K1)

(a) Dry docking (b) Ultrasonic cleaning

(c) Chemical cleaning (d) Mechanical scrubbing

10. Which of the following is a non-toxic alternative to traditional anti-fouling systems? (CO5, K1)

(a) Tributyltin (TBT)

(b) Copper-based coatings

(c) Silicone-based coatings

(d) Hydrogel-based coatings

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

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

11. (a) Classify different types of corrosion. (CO1, K4)

Or

(b) Explain the role of electrochemical methods in corrosion analysis. (CO1, K2)

12. (a) Elaborate the mechanisms of biofilm formation on submerged surfaces. (CO2, K6)

Or

(b) Explain the influence of water quality on biofouling. (CO2, K5)

13. (a) Define the concept of biofilms in the context of biofouling. (CO3, K1)

Or

(b) Examine the characteristics of Sulfate-Reducing Bacteria in biocorrosion. (CO3, K4)

14. (a) Explain the concept of biofouling as a pathway. (CO4, K5)

Or

(b) Analyze the impacts of marine biofouling organisms. (CO4, K4)

15. (a) Discuss the principles of anti-fouling strategies in the shipping industry. (CO4, K6)

Or

(b) Explain the importance of natural and non-toxic antifoulants in biofouling management. (CO5, K2)

Part C (5 × 8 = 40)

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

16. (a) Elaborate the mechanisms of corrosion in detail. (CO1, K6)

Or

(b) Analyze the methods used for corrosion testing and monitoring. (CO1, K4)

17. (a) Evaluate the strategies and challenges in biofouling management. (CO2, K5)

Or

(b) Examine the factors influencing the growth of biofouling organisms. (CO2, K4)

18. (a) Discuss the characteristics of attached macro-fouling communities. (CO3, K6)

Or

(b) Interpret roles and mechanisms of various microorganisms in biocorrosion. (CO3, K5)

19. (a) Identify the relationship between mariculture and biofouling. (CO4, K3)

Or

(b) Justify the economic losses caused by biocorrosion. (CO4, K5)

20. (a) Discuss various anti-fouling systems used in the shipping and aquaculture industries. (CO5, K5)

Or

(b) Demonstrate on the role of education and training in biofouling management within the shipping and aquaculture industries. (CO5, K3)

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