R2096	Sub. Code
	465101

P.G. DIPLOMA EXAMINATION, NOVEMBER – 2024

First Semester

Scuba Diving

MARINE BIODIVERSITY

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. Physical alteration in marine ecosystems can result from: (CO1, K3)

   (a) Trawling and dredging activities

   (b) Photosynthesis in seagrass beds

   (c) Natural tidal movements

   (d) Algal blooms

2. Which biodiversity assessment technique involves the systematic counting of species along a line? (CO1, K3)

   (a) Quadrat sampling

   (b) Line transects surveys

   (c) Point intercept method

   (d) Belt transect method

3. Conflicts in protected areas often arise due to: (CO2, K2)

(a) Overabundance of resources

(b) Competing interests between conservation and local livelihoods

(c) Lack of biodiversity

(d) High levels of pollution

4. One implication of poor resource management is: (CO2, K2)

(a) Enhanced ecosystem services

(b) Degradation of natural habitats and loss of biodiversity

(c) Increased species richness

(d) Improved local livelihoods

5. The class Osteichthyes is characterized by fish that have: (CO3, K3)

(a) Cartilaginous skeletons

(b) Bony skeletons

(c) No skeletons

(d) Soft bodies

6. An example of a marine animal in the phylum Mollusca is: (CO3, K3)

(a) Sea urchin

(b) Octopus

(c) Starfish

(d) Jellyfish

7. Species richness refers to: (CO4, K4)

(a) The genetic variability within a species

(b) The number of different species in each area

(c) The even distribution of individuals among species

(d) The biomass of species in an area

8. A species inventory is used to: (CO4, K4)

(a) Measure the biomass of a population

(b) List and catalog all species in a given area

(c) Analyze genetic diversity within a species

(d) Track the migration patterns of species

9. A major cause of coral bleaching is: (CO5, K4)

(a) Increased nutrient levels in the water

(b) Rising sea temperatures and ocean acidification

(c) Decreased salinity

(d) Excessive sedimentation

10. Mangroves contribute to the health of adjacent coral reefs by: (CO5, K4)

(a) Filtering pollutants and trapping sediments

(b) Increasing the water temperature

(c) Decreasing oxygen levels in the water

(d) Releasing toxins into the water

Part B (5 × 5 = 25)

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

11. (a) Explain the economic importance of biodiversity in the Gulf of Mannar. (CO1, K3)

Or

(b) Write short notes on diverse species of corals in the Gulf of Mannar. (CO1, K3)

12. (a) How do protected areas contribute to the conservation of endangered species? (CO2, K2)

Or

(b) List and describe three endangered species found in the Gulf of Mannar. (CO2, K2)

13. (a) Describe a representative marine invertebrate from the phylum Porifera, including its adaptation and distributions. (CO3, K3)

Or

(b) Explain the adaptation and distribution of a marine reptile. (CO3, K3)

14. (a) Why species inventory is essential for coastal biodiversity management? (CO4, K4)

Or

(b) Discuss species evenness and its importance in maintaining ecological balance. (CO4, K4)

15. (a) Explain the main threats to seagrass ecosystems. (CO5, K4)

Or

(b) Write short notes on the structure and function of the Coral reef ecosystem. (CO5, K4)

Part C (5 × 8 = 40)

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

16. (a) Analyze the major threats to marine biodiversity in the Gulf of Mannar and suggest potential mitigation measures. (CO1, K3)

Or

(b) Evaluate the significance of the Gulf of Mannar's biodiversity for ecological and economic sustainability. (CO1, K3)

17. (a) Evaluate the role of protected areas in the conservation of endangered species and discuss the challenges and benefits associated with their management. (CO2, K2)

Or

(b) Elaborate on the effectiveness of marine policies in protecting biodiversity and suggest ways to improve policy implementation and enforcement. (CO2, K2)

18. (a) Explain in detail the ecological significance of marine invertebrates and their role in maintaining the health and balance of marine ecosystems. (CO3, K3)

Or

(b) Evaluate the distribution and adaptations of marine vertebrates, highlighting the differences and similarities among various classes such as fish, reptiles and mammals. (CO3, K3)

19. (a) Write in detail about the species concept and its application in coastal studies, highlighting the challenges and benefits of different species concepts. (CO4, K4)

Or

(b) Write in detail about the role of species inventories in coastal management and how they contribute to ecological research and conservation efforts. (CO4, K4)

20. (a) Elaborate on the structure, ecological functions and major threats to Coral reef ecosystems, and propose effective management and conservation strategies. (CO5, K4)

Or

(b) Write in detail about the conversation and management strategies for the Mangrove ecosystem. (CO5, K4)

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R2097

Sub. Code
465102

P.G. DIPLOMA EXAMINATION, NOVEMBER – 2024

First Semester

Scuba Diving

BENTHIC ASSESSMENT

(CBCS – 2022 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 1 = 10)

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

1. Stratified sampling is best described as: (CO1, K2)

   (a) Sampling at random locations

   (b) Dividing the study area into homogeneous sections and sampling within each

   (c) Sampling only the most abundant species

   (d) Avoiding sections of the study area

2. An example of a commonly used narcotizing agent in marine studies is (CO1, K2)

   (a) Ethanol

   (b) Clove oil

   (c) Vinegar

   (d) Sodium chloride

3. Which method involves recording the types and abundance of species along a straight line? (CO2, K4)

(a) Transect quadrat method

(b) Line intercept method

(c) Belt transect method

(d) Underwater video transect method

4. Which method is best suited for assessing species distribution along a gradient? (CO2, K4)

(a) Transect quadrat method

(b) Line intercept method

(c) Belt transect method

(d) Point intercept transect method

5. The main advantage of using permanent quadrats in ecological studies is: (C03, K4)

(a) Lower initial setup cost

(b) Ability to track changes in the same location over time

(c) Flexibility to move the quadrat to new locations

(d) Ease of initial installation

6. Which of the following factors is crucial when placing quadrats for sampling? (CO3, K4)

(a) Random placement to avoid bias

(b) Placing only in areas with high species diversity

(c) Ensuring each quadrat is placed at an equal distance

(d) Placing in areas with low species abundance

7. During a Marta Tow Survey, data is typically collected by: (CO4, K2)

(a) Walking along a beach

(b) Towing a net behind a boat

(c) Flying a drone over the area

(d) Using underwater cameras

8. What is the primary purpose of a data sheet for intertidal benthic fauna? (CO4, K2)

(a) To identify the water temperature

(b) To record species diversity and abundance

(c) To track tidal patterns

(d) To measure the pH of the water

9. Pielou's Evenness Index is calculated from: (CO5, K5)

(a) Simpson's Index

(b) Berger-Parker Index

(c) Shannon-Weiner Index

(d) Bray-Curtis Index

10. Simpson's Dominance Index is used to measure (CO5, K5)

(a) Species richness

(b) Species evenness

(c) Species dominance

(d) Species diversity

Part B (5 × 5 = 25)

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

11. (a) Write short notes on the basic steps involved in extraction procedures for marine biological samples. (CO1, K2)

Or

(b) Discuss the various narcotization methods used for marine organisms and their purposes. (CO1, K2)

12. (a) What is the Belt Transect method, and how is it used in marine studies? (CO2, K4)

Or

(b) Write about the Point Intercept Transect method and its effectiveness in marine biodiversity assessments. (CO2, K4)

13. (a) What is the Permanent Quadrat method and how is it utilized in ecological research? (CO3, K4)

Or

(b) Explain the Photo Quadrat method and its advantages in marine research. (CO3, K4)

14. (a) Describe the key components of a data sheet for intertidal benthic fauna. (CO4, K2)

Or

(b) Explain the importance of data management in marine research. (CO4, K2)

15. (a) What is Species Richness, and why is it important in biodiversity studies? (CO5, K5)

Or

(b) Define the Bray-Curtis Index and its application in ecological studies. (CO5, K5)

Part C (5 × 8 = 40)

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

16. (a) Explain the significance of GPS management in marine field studies and how it enhances the accuracy and reliability of research data. (CO1, K2)

Or

(b) Write in detail about the narcotization methods used in marine biology, discussing their ethical considerations, effectiveness and potential impacts on organisms. (CO1, K2)

17. (a) Write in detail about the advantages and challenges of the Underwater Video Transect method in marine research, considering its impact on data collection and analysis. (CO2, K4)

Or

(b) Give a detailed note on the Line Intercept method, highlighting its suitability for specific marine habitats and its role in ecological monitoring. (C02, K4)

18. (a) Explain in detail the Photo Quadrat method, highlighting its suitability for marine environments and its role in ecological monitoring. (CO3, K4)

Or

(b) Elaborate on the Quadrat method in terms of its strengths and limitations for terrestrial and marine biodiversity studies. (CO3, K4)

19. (a) Elaborate on the components and importance of a data sheet for intertidal benthic fauna surveys. (CO4, K2)

Or

(b) Write in detail about the Manta Tow Survey method, focusing on its applications, strengths and limitations in coral reef studies. (CO4, K2)

20. (a) Write in detail about Species Richness and its role as a fundamental measure of biodiversity, including its strengths and limitations. (CO5, K5)

Or

(b) Elaborate on the Berger-Parker Diversity Index, focusing on its calculation, significance, and potential biases in ecological studies. (CO5, K5)

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