

**Chittagong Veterinary and Animal Sciences University, Chittagong**  
**Department of Marine Bio resource Science**

Master of Science in Marine Bioresource Science, January-June Semester Final Examination 2019

Course No: **TMB-501(Compulsory)**, Course Title: **Tropical Marine Biology**

Total Marks: 40, Time: 2 hours

Answer any 4 (four) questions. Illustrate your answer whenever necessary.

1. a) How marine fishes maintain their physiological adaptation to live in high saline water. 5.0  
b) Discuss about the diversity of reproductive modes observed in marine fishes. 5.0
2. a) High nutrients abundance does not necessarily mean high abundance of phytoplankton in marine environment. What is the technical term used to describe this condition and describe the statement? 7.0  
b) Why phytoplankton concentrations are higher in higher latitude region? 3.0
3. a) Explain diatomaceous earth and its role in marine aquatic environment. 4.0  
b) Summarize the phytoplankton-zooplankton interrelationships and their relations to marine fish production. 6.0
4. a) Explain the similarity and contrast in the life cycle of seaweed which show alteration of generation and which do not show alteration of generation. 7.0  
b) Assess the potentiality of seaweed culture in Bangladesh. 3.0
5. a) Discuss why and when high mortality occurs during larval rearing of mangrove crabs in hatchery-based production systems. 5.0  
b) Planktonic crustaceans are very important as larval feeding of most marine fish species—Justify the statement. 5.0
6. a) What is propagule? 2.0  
b) Appraise the human uses of mangroves. 4.0  
c) Interpret the adaptations that have evolved in salt marsh plants to help them survive in areas where the salt content is high. 4.0

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**Faculty of Fisheries**

MS in Marine Bioresource Science, January-June Semester Final Examination 2019

Course Title: Marine Survey and Research; Course Code: MSR 501(T) [Compulsory]

Total Marks 40, Time: 2 hours

*Answer any **FOUR** questions, Illustrate your answer wherever necessary. Figures in the right margin indicate full mark.*

1. a) What do you understand by seismology and acoustic oceanography? 2.0  
b) Mention some important tools and equipment used in acoustical oceanographic research with their specific functions. 3.0  
c) Briefly elucidate the mechanisms of Multibeam SONAR (Sound Navigation Ranging) with its applications in maritime field. 5.0
2. a) What are the criteria of a standard research? 3.0  
b) "A research proposal is a concise coherent summary of the proposed research"- Justify the statement. 3.0  
c) Classify the research types on the basis of maritime survey. 4.0
3. a) Define error and accuracy. 3.0  
b) Differentiate between qualitative and quantitative errors. 3.0  
c) Mention the types of errors occurred in research and their controls. 4.0
4. a) What is the importance of statistical analysis in marine research? 3.0  
b) Briefly discuss the statistical significance including objectives, functions, pros and cons of Two Way ANOVA and Principal Components Analysis Biplot. 7.0
5. a) What do mean by "t" test? 2.0  
b) When to choose a paired "t" test in maritime research with an example. 2.0  
c) Calculate the paired samples "t" test by hand using the following sample salinity of two maritime stations. 6.0

Sample No.	Station#01	Station#02
1	16	30
2	15	25
3	17	23
4	19	22
5	24	23
6	22	32
7	23	29
8	18	24
9	20	31
10	25	27
11	19	26
12	23	27

6. In order to obtain Master of Science in Marine Bioresource Science, researcher must need to conduct the investigation with standard research design. What are the essential parts of a research proposal? Develop a sample research proposal in the research field of Marine Bioresource Science. 10.0

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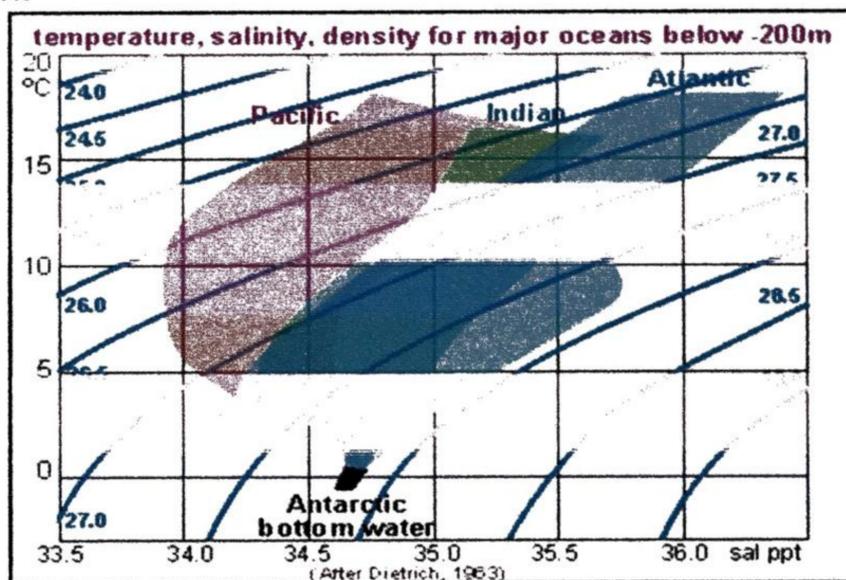
MS in Marine Bioresource Science, January-June Semester Final Examination 2019

Course Title: **Physical and Chemical Oceanography**; Course Code: **PCO 501(T)** [Elective]

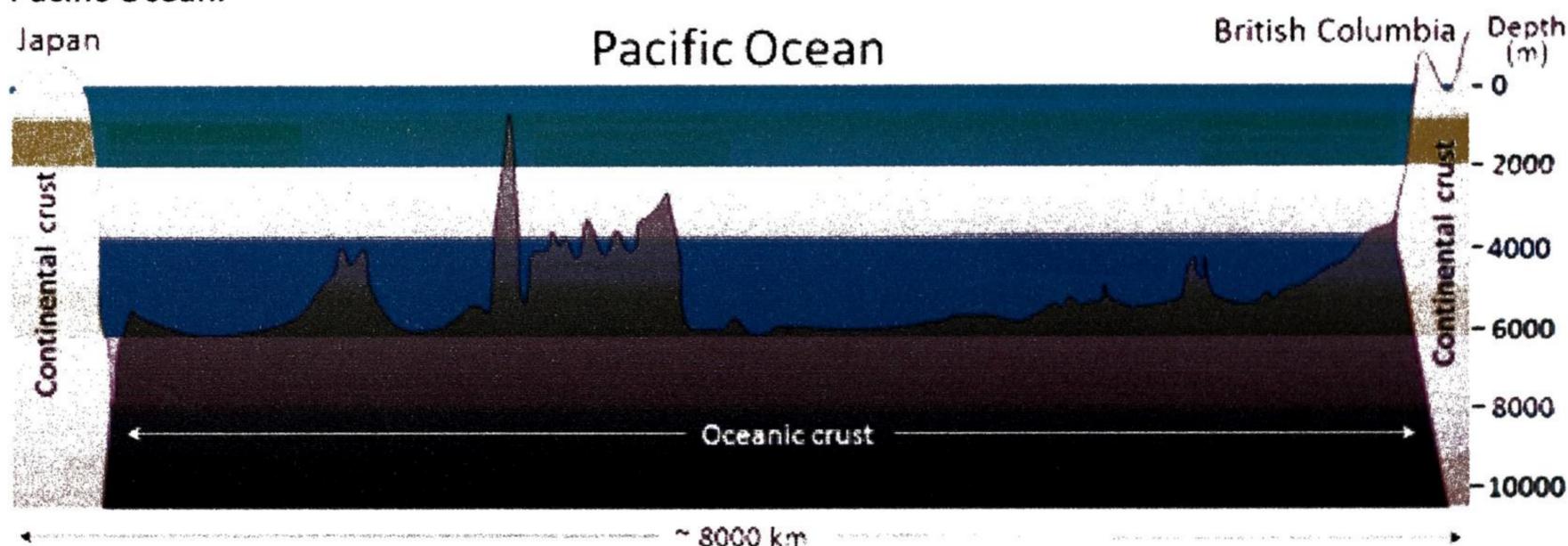
**Total Marks 40, Time: 2 hours**

*Answer any **FOUR** questions, Illustrate your answer wherever necessary. Figures in the right margin indicate full mark.*

- 1. a) In which process humans changing the composition of the ocean? Explain your opinion. 4.0  
b) Briefly illustrate the fate of organic matter made by biological production? 6.0
- 2. a) What do you mean by the solubility of sea salts? 2.0  
b) How the major ions of seawater defined according to the Constancy Composition Law? 3.0  
c) Discuss briefly the following graphical relationship among temperature, salinity and density for major oceans below 200 m. 5.0



- 3. a) Write down the properties and features of the continental margin. 4.0  
b) Briefly elucidate the important feature of the deep ocean floor using the following sketch of Pacific Ocean. 6.0



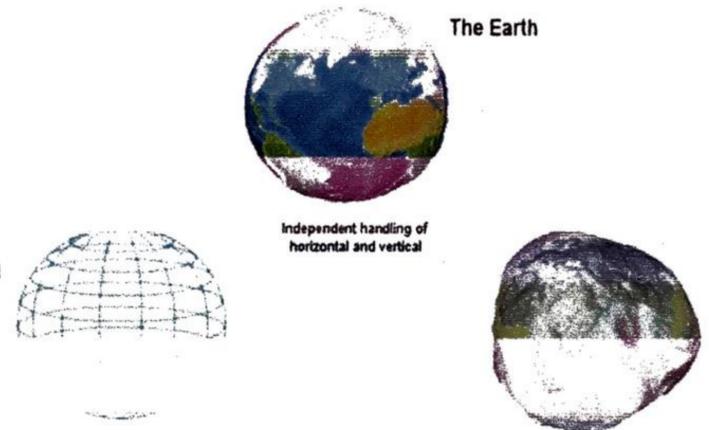
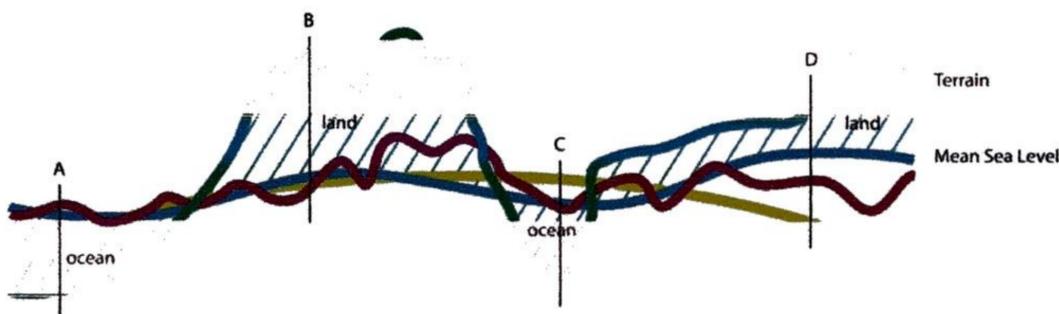
- 4. a) Define marine sediments? Where do these sediments come from? 3.0  
b) How deep-water waves become shallow-water waves? 3.0  
c) Illustrate the calcite compensation depth and Lysocline depth profile in various oceanic environment. 4.0
- 5. a) Write down the mechanisms and process of ocean conveyor belt. 4.0  
b) Briefly explain the oceanic monsoon wind pattern including the sea breeze and land breeze type. 6.0
- 6. a) Why do you care about the Indian Ocean? Specify its significance. 3.0  
b) How Mid Ocean Ridges run through the Indian Ocean? 3.0  
c) Briefly discuss the mechanisms and effects especially the positive phase of the Indian Ocean Dipole (IOD). 4.0

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**MS in Marine Bioresource Science, January-June Semester Final Examination 2019**  
**Course Title: Remote Sensing in Marine Fisheries; Course Code: RMF 501(T) [Elective]**  
**Total Marks 40, Time: 2 hours**

*Answer any **FOUR** questions, illustrate your answer wherever necessary. Figures in the right margin indicate full mark.*

1. a) What do you mean by GIS? 3.0  
 b) Specify the major components of the GIS. 3.0  
 c) Illustrate the process of representing specific information in marine fisheries using different environmental parcels including land, ocean and atmosphere. 4.0
2. a) What are the sources of Electromagnetic radiation? 2.0  
 b) How radiation process interacts with oceanic atmosphere according to various radiation laws? 5.0  
 c) Specify the theory behind atmospheric windows in Remote Sensing. 3.0
3. a) How do satellites make measurement? 3.0  
 b) Explain the basic processes and functionality of Remote sensing. 4.0  
 c) "A picture is worth a thousand words"- Justify the statement in the field of satellite data representation. 3.0
4. a) What do you mean by Datum and MSL? 4.0  
 b) Define Geoid using the following sketch of MSL and terrain. What's the local ellipsoid consider for maritime region along with Bay of Bengal? 3.0



- c) "The earth shape is irregular- positioning needs simplification"- Justify the statement with relevant explanations and examples. 3.0
5. a) How can you specify Fish Habitat mapping? 2.0  
 b) How marine habitats are mapped and integrated in mapping process? 4.0  
 c) Illustrate the process of marine habitats mapping for Bangladesh Maritime Region using various applicable tools. 4.0
6. a) Define Aerial Photography. 2.0  
 b) Specify the significance of ground trothing in remote sensing. 3.0  
 c) Briefly discuss the types of satellite used to study maritime environment? 2.0 5.0

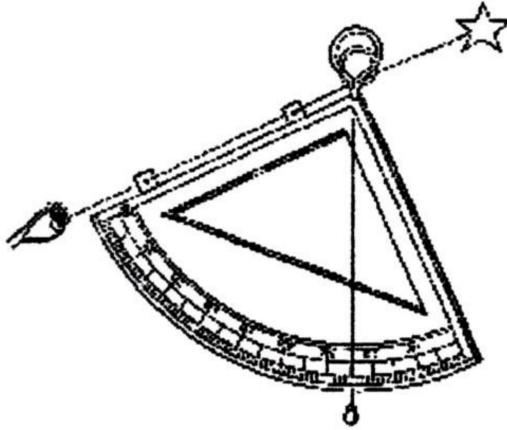
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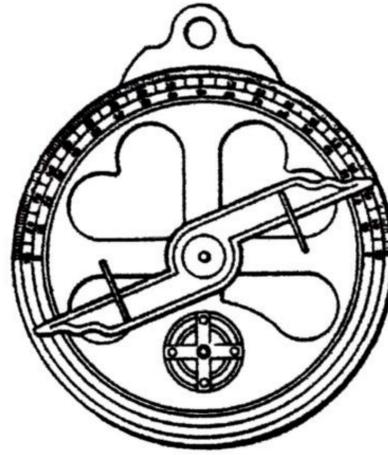
**MS in Marine Bioresource Science, January-June Semester Final Examination 2019**  
**Course Title: Navigation and Maritime Affairs; Course Code: NMA 501(T) [Elective]**  
**Total Marks 40, Time: 2 hours**

*Answer any **FOUR** questions, illustrate your answer wherever necessary. Figures in the right margin indicate full mark.*

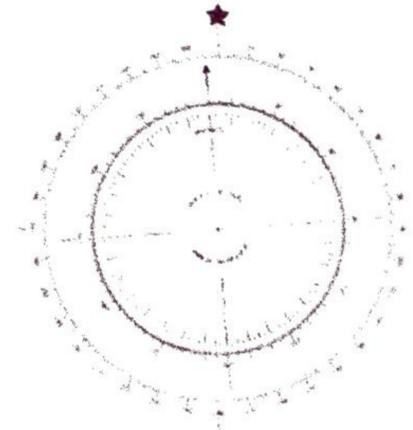
1. a) What's the aim of maritime navigation? 3.0
- b) Briefly discuss the important navigation tools and equipment used for safe navigation and indicate the following three tools A, B and C with their functions. 7.0



A

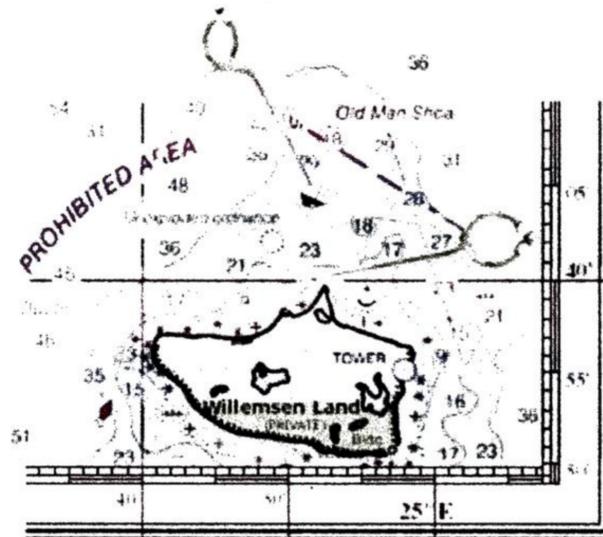


B



C

2. a) What do you mean by navigational chart? 2.0
- b) Specify the essential features of a nautical chart using the following figure. 3.0



- c) Briefly discuss the mechanism of RADAR ensuring safe maritime navigation and avoiding hazards. 5.0
3. a) Differentiate between current and tide. 4.0
- b) Classify the tide on the basis of high and low tidal phase (moon phase on equatorial plane) with illustration and examples. 6.0
4. a) Mention the significance of map projection in GIS? 3.0
- b) Is it possible to preserve all Projection properties at a time in a map? - Clarify your opinion. 3.0
- c) Briefly discuss one of the conformal projections used in navigational purpose. 4.0
5. a) What do you understand by navigational aids and safety? 2.0
- b) Specify the various types of buoys used in maritime navigation. 4.0
- c) Briefly elucidate the specification and speed in the Beaufort wind scale. 4.0
6. a) What do you mean by the Lines of Position (LOP) and Dead Reckoning (DR)? 4.0
- b) How to calculate the distance/range in nm using vertical sextant angle? 2.0
- c) Calculate the range assuming a lighthouse with 75 meters, measured angle is  $2^{\circ}09'$ , index error is  $+5'$ ; water height 3 meters below MSL. 4.0

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Master of Science in Marine Bioresource Science, January-June Semester, Final Examination, 2019

Course Code. MED-501 (Compulsory), Course Title: Marine Ecological Dynamics

Total Marks: 40, Time: 2 hours

Answer any FOUR (04) questions. Illustrate your answer wherever necessary.

1. a) Evaluate the role of succession in the formation of the earth ecosystem over time from the prehistoric age till date. 4  
b) Interpret the existing symbiosis types along with their appropriate example. 6
2. a) Compare and contrast among habitat, niche and microhabitat along with their examples. 6  
b) Formulate the energetics of deep-sea ecosystems. 4
3. a) Illustrate the formation of submarine canyons in the deep sea. 3  
b) Differentiate in between shore and beach. Devise the illustration of the beach types along with their mechanism. 2+5=7
4. a) 'Demarsal organisms stay their whole life in the bottom' - Do you agree with this statement? Present your justification along with your point of argument. 3  
b) Prepare a diagrammatic formation of the adaptation types of the marine organisms along with their proper example. 7
5. a) Categorize the adaptation of the organisms based on the shore types. 5  
b) 'Desiccation and overheating are the major challenges for the shore-living organisms.' Explain what the organisms do to avoid this critical situation. 5
6. a) Propose some approaches to conserve the ecology of the Bay of Bengal. 4  
b) Criticize the BoB-LME project by comparing in between the expected output and the gained output from it. 6