

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018

Course No: EME-102 (T), Course Title: Estuarine and Marine Ecology (Theory)

Total Marks: 70, Time: 3 hours

Answer any 5 (five) questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

1. a) What do you mean by estuarine ecosystem? Classify estuaries on the basis of salinity distribution. 3
b) Describe different types of estuaries based on the water circulation and stratification. 4
2. a) Illustrate a diagram showing the major habitat subdivision of the ocean with proper description. 4
b) Discuss the marine communities found in the hadal zone of marine environment. 3
3. a) Discuss the ecological significance of symbiotic relationship between zooxanthellae algae and corals in marine environment. 3
b) What is coral reef. Discuss different types of coral reef based on their formation. 4
4. a) Discuss the ecological significance of primary producer and decomposers in marine ecosystem. 3
b) Discuss the major groups of plankton found in the estuarine and marine environments. 4
5. a) What are the basic physico-chemical parameters of an estuarine environment? 2
b) How salinity and temperature are related to the solubility of oxygen in seawater? 2
c) Define upwelling and describe its impact on primary production in marine environment. 3
6. a) What do you mean by demersal fish, benthic fish and benthopelagic fish? 2
b) What are the significance of benthic organisms in marine ecosystem? 2
c) Describe the effects of ocean acidification on the benthic communities of marine environment. 3
7. Write down short notes on **any two** of the followings: 3.5×2
a) Intertidal communities b) ENSO and LNSO c) Marine food web

Section-B

8. a) Diagrammatically explain estuary with its main features. 2
b) Classify estuarine organisms on the basis of their migration patterns. 3
c) Mention the names of at least 10 estuaries of Bangladesh. 2
9. a) What do you mean by keystone species? What is the role of keystone species in estuarine and marine environment? 2
b) Discuss the various adaptation found in estuarine plants and animals. 3
c) Compare and contrast between seaweed and seagrass. 2
10. a) Illustrate the five main latitude region of the earth with brief description. 3
b) Discuss about the zoogeographical distribution of tuna species in oceanic environment. 4
11. a) Why epipelagic zone of marine environment is very rich in biodiversity? 2
b) What is marine snow. What is the significance of marine snow for deep oceanic organisms? 2
c) Discuss adaptation found in the organisms live in the deep oceanic environment. 3
12. a) What do you mean by biogeochemical cycle? Discuss the carbon cycle of marine environment. 4
b) Explain the five steps of nitrogen cycle of marine environment. 3
13. a) What do you mean by coral bleaching? How does climate change affect coral bleaching in marine ecosystem? 3
b) What are the condition needed for coral development? Why corals are limited to St. Martin Island of Bangladesh. 3
c) Differentiate between hard coral and soft coral. 1
14. Write down short notes on **any two** of the followings: 3.5×2
a) Large marine ecosystem b) Mangrove communities c) Trophic level and food pyramid

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
 B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018
 Course No: ASS102 (T), Course Title: Aquatic Soil Science(Theory)
 Total Marks: 70, Time: 3 hours

Answer any 5 (five) questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

- | | | |
|----|---|-----|
| 1. | a) Define soil and soil science. | 3.0 |
| | b) How you will utilize the knowledge of aquatic soil science in fisheries. | 4.0 |
| 2. | a) Define pH. | 1.0 |
| | b) Write down the importance of pH. | 2.0 |
| | c) Discuss the mechanism of buffering in soils. | 4.0 |
| 3. | a) What are decomposition and mineralization? | 2.0 |
| | b) Describe the processes of encouraging beneficial microbes. | 5.0 |
| 4. | a) Discuss probiotics with examples. | 1.0 |
| | b) When you will apply probiotics in aquatic soils? | 2.0 |
| | c) Describe the management approaches of bottom mud of a pond. | 4.0 |
| 5. | a) What is soil colloids? | 1.0 |
| | b) Write a note on "Humus" with diagram. | 3.0 |
| | c) Describe balanced fertilization of soils showing practical situation. | 3.0 |
| 6. | a) What is Acid Sulphate Soils (ASS)? | 1.0 |
| | b) Discuss the reasons of ASS formation in soils. | 2.0 |
| | c) Write down the chemistry of ASS. | 4.0 |
| 7. | a) What are biological properties of soil? | 1.0 |
| | b) Write down the importance of soil microbes with examples. | 3.0 |
| | c) Discuss the ways of controlling harmful soil biota. | 3.0 |

Section B

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|-----|---|-----|
| 8. | a) What is soil texture? | 1.0 |
| | b) Describe the factors that contribute to develop soil texture. | 3.0 |
| | c) Why loamy soils are suitable for aquaculture and fisheries management? | 3.0 |
| 9. | a) Why exchange capacity of cations (CEC) are higher than that of anions? | 1.0 |
| | b) Write down the importance of CEC in aquatic soils. | 2.0 |
| | c) A 50g sample of soil is leached with 1N CaCl ₂ . The adsorbed Ca ²⁺ is displaced in 750mL of 4N NaCl solution. The Ca concentration in the leachate is 400mg/L. Now calculate the CEC and identify the soil texture. | 4.0 |
| 10. | a) Differentiate between bulk density and particle density. | 2.0 |
| | b) Discuss the physical properties of a soil. | 5.0 |
| 11. | a) a. Write down the drawbacks of clay soils. | 3.0 |
| | b) b. Discuss the appropriate management of clay soils for aquaculture. | 4.0 |
| 12. | a) Draw and label cation and anion exchange through plant root hair. | 3.0 |
| | b) "Bottom mud is the store-house of nutrients."- Justify the statement | 4.0 |
| 13. | a) Why aquaculture is unsuitable in sandy soils? | 2.0 |
| | b) Discuss the combined management of such soils to overcome their problems. | 5.0 |
| 14. | a) What is soil biota? Write down their functions in soils. | 3.0 |
| | b) Discuss the optimal conditions for microbial growth. | 4.0 |

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination 2018
Course No:LAN 102 (T), Course Title: **Communicative English (Theory)**
Total Marks: 35, Time: 2 hours

Answer ALL the questions. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

1. Use the right form of verbs in the following sentences: 5
 - a) We must not forget that excessive exercise (make) us sick.
 - b) A teacher is often (compare) with an architect.
 - c) It is high time we (change) our attitude towards the teacher.
 - d) The headmaster and the secretary (be) here for the recruitment.
 - e) He said that he (be) here for five months.

2. Complete the following sentences: 5
 - a) When children get older, _____
 - b) _____ because of deforestation.
 - c) Since Bangladesh is a riverine country, _____ .
 - d) _____ unless people try to change their own luck.
 - e) Even if one fails, _____ .

3. Despite Bangladesh's long coastline and large freshwater and marine water bodies, fisheries are underdeveloped compared to other industry sectors. Inland fisheries production has escalated over the years, but the productivity per hectare water area is not yet attained at its optimum. Now, write a letter to the editor of an English daily stating how fish production could be increased utilizing numerous water bodies of Bangladesh. 7

Section B

4. Change the following sentences as directed: 5
 - a) People say that man is mortal. (Make it passive.)
 - b) Karim said to Mina, "You look a little bit like my sister." (Change the speech.)
 - c) The teacher told an interesting story to the learners. (Make it complex.)
 - d) The officer is very sympathetic to the peon. He goes away. (Join the sentences.)
 - e) I wanted quiet isolation. I could do some troublesome writing. (Join the sentences)

5. Write a paragraph of about 150 words on "Importance of friends in life". 5

Not all collectors are interested in learning from their hobby, though, so what we might call a psychological reason for collecting is the need for a sense of control, perhaps as a way of dealing with insecurity. Stamp collectors, for instance, arrange their stamps in albums, usually very neatly, organising their collection according to certain commonplace principles- perhaps by country in alphabetical order, or grouping stamps by what they depict- people, birds, maps, and so on.

One reason, conscious or not, for what someone chooses to collect is to show the collector's individualism. Someone who decides to collect something as unexpected as dog collars, for instance, may be conveying their belief that they must be interesting themselves. And believe it or not, there is at least one dog collar museum in existence, and it grew out of a personal collection.

Of course, all hobbies give pleasure, but the common factor in collecting is usually passion: pleasure is putting it far too mildly. More than most other hobbies, collecting can be totally engrossing, and can give a strong sense of personal fulfilment. To non-collectors, it may appear an eccentric, if harmless, way of spending time, but potentially, collecting has a lot going for it.

Choose ONE WORD ONLY from the passage for each answer.

Fill in the following blanks:

- a. The writer mentions collecting as an example of collecting in order to make money.
- b. Collectors' clubs provide opportunities to share
- c. Searching for something particular may prevent people from feeling their life is completely
- d. tends to be mostly a male hobby.

Do the following statements agree with the information given in the reading passage?

Beside question number e—h on your answer sheet, write:

TRUE if the statement agrees with the information

FALSE if the statement contradicts the information

NOT GIVEN if there is no information on this

- e. The number of people buying dolls has grown over the centuries.
- f. Arranging a stamp collection by the size of the stamps is less common than other methods.
- g. Someone who collects unusual objects may want others to think he or she is also unusual.
- h. Collecting gives a feeling that other hobbies are unlikely to inspire.

6. Read the passage carefully and answer the questions that follows:

8

Collecting must be one of the most varied of human activities, and it's one that many of us psychologists find fascinating. Many forms of collecting have been dignified with a technical name: an arctophilist collects teddy bears, a philatelist collects postage stamps, and a deltiologist collects postcards. Amassing hundreds or even thousands of postcards, chocolate wrappers or whatever, takes time, energy and money that could surely be put to much more productive use. And yet there are millions of collectors around the world. Why do they do it?

There are the people who collect because they want to make money - this could be called an instrumental reason for collecting; that is, collecting as a means to an end. They'll look for, say, antiques that they can buy cheaply and expect to be able to sell at a profit. But there may well be a psychological element, too - buying cheap and selling dear can give the collector a sense of triumph. And as selling online is so easy, more and more people are joining in.

Many collectors collect to develop their social life, attending meetings of a group of collectors and exchanging information on items. This is a variant on joining a bridge club or a gym, and similarly brings them into contact with like-minded people. Another motive for collecting is the desire to find something special, or a particular example of the collected item, such as a rare early recording by a particular singer.

Some may spend their whole lives in a hunt for this. Psychologically, this can give a purpose to a life that otherwise feels aimless. There is a danger, though, that if the individual is ever lucky enough to find what they're looking for, rather than celebrating their success, they may feel empty, now that the goal that drove them on has gone.

If you think about collecting postage stamps another potential reason for it - or, perhaps, a result of collecting - is its educational value. Stamp collecting opens a window to other countries, and to the plants, animals, or famous people shown on their stamps. Similarly, in the 19th century, many collectors amassed fossils, animals and plants from around the globe, and their collections provided a vast amount of information about the natural world. Without those collections, our understanding would be greatly inferior to what it is.

In the past - and nowadays, too, though to a lesser extent - a popular form of collecting, particularly among boys and men, was trainspotting. This might involve trying to see every locomotive of a particular type, using published data that identifies each one, and ticking off each engine as it is seen. Trainspotters exchange information, these days often by mobile phone, so they can work out where to go to, to see a particular engine. As a by-product, many practitioners of the hobby become very knowledgeable about railway operations, or the technical specifications of different engine types.

Similarly, people who collect dolls may go beyond simply enlarging their collection, and develop an interest in the way that dolls are made, or the materials that are used. These have changed over the centuries from the wood that was standard in 16th century Europe, through the wax and porcelain of later centuries, to the plastics of today's dolls. Or collectors might be inspired to study how dolls reflect notions of what children like, or ought to like.

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018

Course No: **ICH-102 (T)**, Course Title: **Ichthyology (Theory)**

Total Marks: 70, Time: 3 hours

Answer any **5 (five)** questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

1. a) Why fishes are called cold blooded animal? 1
b) "Ichthyologists play vital role in the field of fisheries"- explain. 3
c) Give an example of a catadromous fish and write the identifying characters of its order. 3
2. a) Distinguish between Chondrichthyes and Ostichthyes. 2
b) Write the notable characters and two examples from each of the following orders: i) Cypriniformes; 5
ii) Squaliformes; iii) Channiformes; iv) Torpediniformes and v) Siluriformes.
3. a) What is meant by skeleton of fish? 1
b) Discuss about vertebral column and ribs of fish. 3
c) Define fish muscle. Classify fish muscle based on attachment and functional point of view. 3
4. a) What are the differences between physostomous and physoclistous? 2
b) Write the variations of gas bladder in fishes. 2
c) Describe the mechanism of filling and emptying of gas in gas-bladder. 3
5. a) What do you mean by venus heart? Diagrammatically show the position of valves in fish heart. 2
b) Illustrate the arterial blood circulation in bony fish with diagram. 5
6. a) What are the parts of alimentary canal? Write down the functions of bile in digestive system. 2
b) Classify fish on the basis of food habit with examples. 2
c) "Herbivore fishes have longer intestine than carnivores"- explain. 3
7. a) Define and classify receptors. 2
b) Describe the structure of neuron with figure. 3
c) Mention the secretions of pituitary and thyroid gland in fish. 2

Section-B

8. a) Define blood. Mention its functions. 2
b) Describe the components of circulatory system in fish. 3
c) Show the diagram of blood circulation in bony fish. 2
9. a) "Pancreas acts as both endocrine and exocrine gland"-explain. 2
b) What is feeding adaptation? Explain the feeding adaptation found in mouth, teeth and gill with figures. 4
c) What do you mean by electrolocation? 1
10. a) Differentiate between artery and vein. 2
b) What do you understand by pseudobranch and gill pouch? 2
c) Describe the branchial glands of fish gill. 3
11. a) Define osmoregulation and homeostasis. 2
b) Classify fish kidney on the basis of their configuration with examples. 2
c) Discuss the osmoregulatory mechanism of *Scoliodon sorrakowah*. 3
12. a) Draw a labeled diagram of trunk and first caudal vertebra of bony fish. 2
b) Describe the structure of fish muscle with figure. 5
13. a) State Thayer's principle of colouration. 1
b) What are the sources of colouration in fish? 2
c) Discuss the significance of colouration in fish. 4
14. Write notes on any **02(Two)** of the followings: 3.5×2= 7
i) Modes of reproduction in fishes; ii) Bohr Effect and ii) Sensory mechanisms in fish

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B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018
Course No: HPF 102 (T), Course Title: **Handling & Preservation of Fish (Theory)**
Total Marks: 70, Time: 3 hours

*Answer any **5 (five)** questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.*

Section-A

1. a) What do you mean by fish preservation? Write down the principles of fish preservation. 3
b) Define 'spoilage' and 'shelf-life' of fish. What are the components of whole fish? Classify fish protein on the basis of solubility and give an example of each. 4
2. a) Draw and label the schematic diagram of a bony fish muscle. 3
b) Discuss the factors influencing kind and rate of spoilage. How will you slow down the rate of spoilage? 4
3. a) Define rigor-mortis. Categorize the factors influencing the rigor mortis of fish. 3
b) Discuss briefly the factors influencing the rigor mortis in fish. Explain the terms: (i) thaw rigor; & (ii) gapping. 4
4. a) Describe briefly personal hygiene and sanitation practices in a fish processing establishment. 3
b) Draw and layout of a typical shrimp processing plant. 4
5. a) Briefly describe different live fish transportation methods. 3
b) Give a brief overview on handling of fish in local and distant markets. 4
6. a) Define fish chilling. Explain briefly why fish is regarded as more perishable item than any other flesh foods. 3
b) Write down the effects of delayed icing on the quality of fish. Explain thermal arrest point. 4
7. Write down short notes on (i) Mother Vessel, & (ii) RSW. 3.5 X 2 = 7

Section B

8. a) What is freezing? Why freezing point of fish is lower than the pure water? 3
b) Draw and explain the fish freezing curve. Why thermal arrest point plays a significant role in fish freezing? 4
9. a) Mention the key factors of staff hygiene to be followed in fish processing plant. How will you clean a fish working premises? 3
b) List down the name of suitable disinfectants including ingredients, typical application with limitations used in cleaning the working premises of fish processing plant. 4
10. a) Discuss the importance of washing and sorting of fish. What is potable water? 3
b) How water activity (a_w) plays a significant role in fish preservation? 4
11. a) Name different types of cold store used in fish preservation. Write down characteristics of an ideal cold storage for frozen fish. 3
b) What are the advantages and disadvantages of bulking and shelving stowage methods? Explain the impacts of IQF technique in fish preservation. 4
12. a) Explain briefly the major problems facing by the fish processing industry of Bangladesh in exporting fishery products. 3
b) Define glazing. Write the importance of establishing shrimp processing industries in Bangladesh. 4
13. a) Distinguish between fish preservation and fish conservation. Write scientific and common name of two shellfish and mollusks having commercial importance. 3
b) How ice retards spoilage of fish? What are the changes take place during chilling of fish? Explain the frozen fish and fishery products are frozen at -40°C but stored at -18°C . 4
14. Write down short notes on (i) Dry ice, & (ii) MAP 3.5 X 2 = 7

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
 B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018
 Course No: WQM 102 (T), Course Title: **Water Quality Management(Theory)**
 Total Marks: 70, Time: 3 hours

*Answer any **5 (five)** questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.*

Section-A

- | | | |
|----|---|-----|
| 1. | a) Define water quality variable. | 1.5 |
| | b) Classify water quality variables giving examples from each class. | 2.5 |
| | c) What is the importance of the study of different water quality variables? | 3.0 |
| 2. | a) Enlist the sources of turbidity in aquaculture system. | 2.0 |
| | b) Make a plan to control turbidity problem in fish pond. | 3.0 |
| | c) How water temperature, fish growth and reproduction are interlinked with each other? | 2.0 |
| 3. | a) What is eutrophication? | 2.0 |
| | b) What are the primary symptoms of eutrophic water? | 2.0 |
| | c) Why eutrophication is harmful for aquatic organism? | 3.0 |
| 4. | a) "High level of ammonia found in winter season than the summer season"- Justify. | 2.0 |
| | b) Which forms of NH ₃ is harmful for fish culture? | 2.0 |
| | c) How does pH and temperature affect on NH ₃ toxicity? | 3.0 |
| 5. | a) Differentiate between pollution and contamination. | 2.0 |
| | b) List down the major water pollutants with examples and their sources. | 2.0 |
| | c) How does water pollution affect fish? | 3.0 |
| 6. | a) What are the sources of DO in waterbody? | 2.0 |
| | b) Establish the relationship among DO, CO ₂ , pH and photosynthesis. | 3.0 |
| | c) Give examples of point and non point sources of pollution in the river systems of Bangladesh. | 2.0 |
| 7. | a) Classify the common types of liming materials and choose which one is the best for aquaculture pond? | 2.0 |
| | b) Which factors should be considered before liming in fish pond? | 2.0 |
| | c) Describe the different methods of applying lime in fish pond. | 3.0 |

Section B

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| 8. | a) What do you know about water quality management? | 2.0 |
| | b) How will you apply water quality management knowledge in the field of fisheries as a farm manager? | 5.0 |
| 9. | If you observe fish trying to breathe by mouth coming on the surface waterbody at early morning, what do you suspect in respect of water quality and why it is happened? How will you solve the problem? | 7.0 |
| 10. | a) "Concentration of free CO ₂ becomes high before sunrise"- Explain this statement. | 2.0 |
| | b) Identify the H ₂ S gas problem in culture pond. | 2.0 |
| | c) Describe the iron management practice in aquaculture production systems. | 3.0 |
| 11. | a) How does ammonia reduce in waterbody by nature? | 2.0 |
| | b) Show the relation of water depth, temperature and light to manage the water quality in fish pond. | 3.0 |
| | c) "Bottom mud acts as a storehouse of nutrients for aquatic productivity" – Justify this statement. | 2.0 |
| 12. | a) What do you mean by TAN? | 2.0 |
| | b) How does toxic NH ₃ form in pond? | 2.0 |
| | c) Why does feeding management so important to control NH ₃ problem in aquaculture pond? | 3.0 |
| 13. | a) What are the basic nutrients of pond water? | 2.0 |
| | b) Discuss the role of nutrients on pond water quality. | 2.0 |
| | c) What are the major sources of nutrients in aquaculture pond? | 3.0 |
| 14. | a) What do you mean by pond fertilization? | 1.0 |
| | b) Write down the advantage of fertilizing the grow-out ponds with cow dung and lime. | 4.0 |
| | c) Discuss the effects of over fertilization on pond water quality. | 2.0 |

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -1 Semester-2, Final Examination' 2018
Course No: FWA-102 (T), Course Title: Freshwater Aquaculture(Theory)
Total Marks: 70, Time: 3 hours

Answer any 5 (five) questions from each section. Figures in the right margin indicate full mark. Use separate answer script for each section.

Section-A

1. a) Explain how you will select a good site for commercial fish production? 3
b) Differentiate among different aquaculture systems with their limitations in Bangladesh. 4
2. a) Classify different types of pond based on purposes. 3
b) What is composite fish culture? 1
c) Describe the importance of integrated aquaculture in Bangladesh. 3
3. a) Distinguish between monoculture and polyculture with their advantages and limitations. 3
b) Why composite fish culture is more preferable to commercial fish farmers? 4
4. a) Show the design of a net cage. 2
b) Mention the foulers usually found in cage culture. 2
c) What are the remedial measures need to be taken in cage culture? 3
5. a) What is the difference between pen and cage? 2
b) What type of site is suitable for cage culture? 3
c) Mention the construction materials required for preparation of a cage. 2
6. a) 'Liming is a must in aquaculture'- justify. 2
b) 'Proper level of liming and fertilization can reduce the feed cost'- how? 5
7. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) Bundh spawning; b) Creek aquaculture; c) Organic aquaculture

Section -B

8. a) Discuss the present status and potentiality of ornamental fish culture in Bangladesh. 3
b) Describe the culture practice of an ornamental fish in an aquarium. 4
9. a) What is backyard hatchery? 2
b) Mention the suitable fishes used for backyard hatchery. 2
c) Explain the economic importance of this type of hatchery. 3
10. a) Show the process of packing for fry transportation. 2
b) Mention the causes of fry mortality during transportation. 2
c) What is the importance of antiseptics and antibiotics application during fry transportation? 3
11. a) What is the difference of culture technique between fish fry and shrimp fry? 2
b) Describe the operation and management of freshwater prawn culture. 5
12. a) 'Polyculture of indigenous IMCs with exotic species is more beneficial'- justify why? 3
b) Explain the process of snakehead culture in commercial fish project. 4
13. a) How pen culture can be utilized in unutilized open water resources? 3
b) Develop a plan to utilize aquatic weeds and blooms in sustainable means. 4
14. Write down short notes on any two of the followings: 3.5 X 2 = 7
a) SIS; b) Predator control ; c) Breeding of goldfish