Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -2 Semester-2, Final Examination' 2018
Course No: **FEC-202 (T),**Course Title: **Fisheries Economics(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 economics and fisheries economics. Distinguish between micro and macro economics. 3
   b) Discuss the present status of fish production and its economic importance in context of Bangladesh. 4

2. a) Briefly explain the concepts of utility and marginal utility. 3
   b) What does the law of diminishing marginal utility state? Use graph to illustrate your answer. 4

3. a) Distinguish between the concepts of want and demand. 3
   b) Argue that short-run supply curve for fish is steeper than long-run supply curve. 2
   c) State the law of demand. 2

4. a) What is market equilibrium? 2
   b) Consider that a fish market has the following demand and supply function: $Q_d = 200 - 5P$ and $Qs = -100 + P$. Find the equilibrium price and the quantity sold of fish. 5

5. a) Define Agricultural credit. Discuss the problems of Agricultural credit for fish farmers in context of Bangladesh. 5
   b) Distinguish between share and debenture. 2

6. a) Define financing. Why financing is essential for fisheries entrepreneur? 2
   b) Discuss the sources of finance of agricultural enterprises in context of Bangladesh. 5

Section B

7. a) Define fixed cost and variable cost. 2
   b) Argue that as a fishery farm increases its output average fixed cost falls. Why is short-run average cost curve U-shaped? 5

8. a) Define budget. Distinguish between complete and partial budget. 2
   b) Discuss the break-even-analysis graphically. 5

9. a) Define Iso-quant. Write the characteristics of Iso-quant. 3
   b) Explain graphically the producer's equilibrium with the help of Iso-quant and budget line. 4

10. a) Define production cost and cost function. Write the relation between MC and AC. 3
    b) Show and explain the profit maximizing situation graphically on the basis of TR and TC. 4

11. a) Define project. Write the characteristics of a project. 3
    b) Briefly discuss the use of technique for discounted project appraisal.

12. a) Define money. Write the limitations of barter system. State and discuss the functions of money. 4
    b) Discuss the functions of the commercial bank. 3

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -2 Semester-2, Final Examination' 2018
Course No: **FPD 202 (T)**, Course Title: **Fish Population Dynamics (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 fish population. Give an example of fish population. 2
   b) Fish population is a simple biological system- explain. 3
   c) What are the different types of spacing in a unit stock? Explain. 2

2. a) Define CPUE. Write examples of CPUE with increasing refinement. 3
   b) Measures of CPUE are poor indices of abundance- why? 4

3. a) Differentiate between fishery dependent and fishery independent data. 3
   b) Define catchability coefficient. Why does it vary? 4

4. a) Distinguish between absolute abundance and relative abundance. 3
   b) You have to name at least eight methods of estimating absolute abundance 4

5. a) How do you estimate the 95% confidence interval of mean for a population from a sample data? Explain. 3
   b) Write down why Petersen method would be biased in mark-recapture method? Explain. 4

6. a) Why is length measurement chosen usually for recording the size of aquatic animals? 1
   b) What is isometric growth? Write down the reason that explain the cubic relationship exist between length and weight of fish? 4
   c) What is condition factor? Mention its usefulness. 2

7. a) Develop equations to estimate absolute abundance in depletion method. 3
   b) Give an ideal example of CPUE in gill net fishery. How does relative abundance relate with population size? 4

Section B

8. a) Mention the advantages of fast growth rate. 2
   b) How do you estimate asymptotic length and growth coefficient with vonBertalanffy equation? Explain. 5

9. a) Write down the difficulties of single sample method. 2
   b) Analyze the mean lengths at ages of ribbon fish stock given in the following table to estimate the parameters K and Lα. 5

Age (year)	I	II	III	IV	V	VI
Length (mm)	234	295	346	390	427	458

10. a) Name some hard parts of fish. Describe back calculation. 2
    b) Describe the stages of reproductive development in shrimp based on macroscopic criteria. 5

11. a) What are the reasons behind varying recruitment of fish? 2
    b) Estimate stock recruitment relationship employing Shepherd model with different values of 'b'. 5

12. a) Define L_c and L_m. 3
    b) Linearize the S-shaped equation algebraically. 4

13. a) How do you estimate the area swept by a towed trawl net? When is vulnerability equal to catchability? 2
    b) A depletion experiment using traps on an isolated 24 km^2 stock of crabs was run over 4 weeks. The number of crabs caught and the number of traps used per week are shown in the following table. Estimate the catchability coefficient per km^2 and the initial exploitable stock size. 5

Traps	Catch	Week
140	2274	1
183	2376	2
235	2734	3
204	1836	4

14. a) What is GSI? How is it calculated? 2
    b) An experiment involving covering the codend of a trawl net with a cover made of smaller mesh netting produced the following small sample. Make an initial estimate of L_c. 5

Frequency (cover)	Frequency (codend)	Length (cm)
8	0	8
9	1	10
11	3	12
13	3	14
8	12	16
4	14	18
2	13	20
1	25	22
0	19	24

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -02 Semester-02, Final Examination' 2018
Course No: **FOC-202 (T)**, Course Title: **Fisheries Oceanography (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)	Evaluate how oceanography is a multidisciplinary subject.	2
	b)	Illustrate the mechanism of forming of mid-ocean ridge and relate it with plate tectonics.	3
	c)	Summarize the major findings of the voyage "Challenger".	2
2.	a)	What is salinity and artificial seawater? What are the difficulties of making artificial seawater?	3
	b)	What are the seawater colligative properties	2
	c)	What are the major and minor elements of seawater?	2
3.	a)	What do you mean by ocean stratification?	2
	b)	What is the significance of T-S diagram?	2
	c)	"Water density is a function of Salinity, Temperature and Pressure"-Explain the statement.	3
4.	a)	Define wave. What are the features of an ideal orbital wave in the ocean?	3
	b)	Mention some forms of wave in the ocean in respect to wave period and water depth.	4
5.	a)	What is ocean current? What process brings deep ocean currents up?	2
	b)	Name five major ocean currents.	2
	c)	Which one is dangerous-Rip current and longshore current? Why?	3
6.	a)	Illustrate the factors related with oceanic sediment transportation.	3
	b)	What kind of algae and protozoans contribute to the formation of calcareous and silicious ooze?	2
	c)	Why all algae can contribute to the formation of biogenous sediment?	2
7.	Write short notes on **any two** of the followings-		3.5×2
	a) Constancy of composition b) Oceanic and continental crust c) Bengal Fan d) Topography and Bathymetry		

Section-B

8.	a)	What are the driving force of plate techonomic?	2
	b)	Interpret the key principles of plate tectonics in ocean environment.	2
	c)	Sketch the variations of convergent boundaries along with their mechanism	3
9.	a)	Diagrammatically discuss the mechanism of wave formation in oceans.	3
	b)	Compare and contrast the Coriolis effect and Ekman transport and their aftermath.	4
10.	a)	Relate in between sediment composition and benthic community structure.	2
	b)	Outline the arrangement of sediment in ocean bottom construction.	3
	c)	Categorize the variation of sediment on the basis of respective criteria.	2
11.	a)	Interpret the GIS based fishing ground forecasting model along with GIS	2
	b)	How can you use "Near Real-Time" oceanographic data for fishing?	2
	c)	Illustrate the fishing ground of the Bay of Bengal with their locations in Bangladesh.	3
12.	a)	What are the major physical properties of seawater?	2
	b)	Explain the vertical temperature profile of ocean.	3
	c)	What are the main causes of uneven surface temperature distribution of the world oceans?	2
13	a)	Define tide? Describe the tide generating forces of the ocean with proper illustration.	5
	b)	What type of tide we observe from Bangladesh coast?	2
14.	Write short notes on **any two** of the followings:		3.5×2
	a) El Nino and La Nina b) Ocean bottom topography c) Upwelling and Downwelling d) Manganese nodules		

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -2 Semester-2, Final Examination' 2018
Course No: 202 (T), Course Title: Fisheries Microbiology (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 Fisheries Microbiology. 1
   b) Who is regarded as the father of modern Microbiology? Mention his contributions in development of Microbiology. 3
   c) Explain geographical distribution and role of microorganisms in nature. 3

2. a) Describe the morphology and structure of molds with labeled diagram. 5
   b) Give examples of Bread yeast, False yeast, Fish Pathogenic mold and Antibiotic producing mold. 2

3. a) List down the similarities and dissimilarities among mold, yeast and bacteria. 3
   b) Describe any two molds having economic importance. 4

4. a) Compare between Gram-positive and Gram-negative bacteria. Give one example of each category. 3
   b) Justify "fish is a good substrate for bacterial growth". 4

5. a) Why bacterial spores are more resistant than the vegetative cells? Illustrate different arrangement of spores in bacterial cells with examples. 3
   b) What are the differences between Gram positive and Gram negative bacteria? 2
   c) "Cell membrane is the most dynamic structure of bacterial cell"-explain. 2

6. a) What is 'generation time'? Explain the generation time of bacteria. Define bacterial spore. 3
   b) Discuss the factors affecting the growth and multiplication of bacteria. 4

7. a) Differentiate DNA and RNA viruses with examples. 2
   b) Briefly describe different steps of multiplication of Bacteriophage with illustration. 5

Section B

8. a) Distinguish between food infection and food intoxication with examples. Define botulism. 4
   b) List down 3 (three) spore forms and 5 (five) non-spore forming pathogenic bacteria. 3

9. a) Give a brief description of industrially important yeasts. 4
   b) What are the differences between the bacterial and fungal spores? 1
   c) Classify bacteria on the basis of their temperature and oxygen requirements. 2

10. a) Explain the factors influencing the growth of microbes. 2
    b) Write down the generation time of bacteria, mold and yeast. 1
    c) How temperature, pH and microbial interactions affect microbial growth? 4

11. a) Draw and indicate different morphological types of bacteria. 2
    b) Draw an imaginary bacterial growth curve and describe different phases of bacterial growth. 3
    c) What is chemotaxis? Illustrate different types of flageller arrangement on bacterial cell surface. 2

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -2 Semester-2, Final Examination' 2018
Course No: **FPA-202 (T),**Course Title: **Fish Parasitology(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) Distinguish between facultative and obligate parasitism with examples. 2
   b) Categorize permanent parasitism and give examples for each category. 5

2. a) Differentiate symbiosis and parasitism. 2
   b) Classify symbiosis (with example) based on spatial relationship between the partners and their degree of closeness. 3
   c) Write down briefly on commensalism. 2

3. a) Elaborate the term host specificity. 2
   b) Briefly describe Argulosis in fish. How do you control them? 5

4. a) Categorize major groups of fish parasites with examples. 3
   b) Describe the morphological characters of two groups of endoparasites of fish with examples. 4

5. a) Define incidence and relative density. 2
   b) Explain the relationship among host, parasite and environment. 2.5
   c) Write down the influence of individual fish species on parasite fauna. 2.5

6. a) Differentiate between definitive host and intermediate host. 2
   b) Illustrate life cycle of a cestode. 5

7. Write down short notes on any two of the followings: 3.5 X 2 = 7
   a) Concepts of parasitism; b) Hyperparasitism; c) Parasymbiosis

Section B

8. a) Give a list of protozoan diseases in fish with their causative agents. 2
   b) Explain white spot disease with special emphasis on symptoms, pathology, life cycle and control. 5

9. a) Identify public health problems associated with fish consumption. 4
   b) What are the possible recommendations to overcome the health hazards? 3

10. a) Write the names of different stages of life cycle of digenetic trematode of fish. 1
    b) Describe the pattern of life cycle of 'Yellow grab'. 4
    c) What are the clinical signs of 'Yellow grab' disease in fish. 2

11. a) How parasite and host biology can influence parasite fauna in nature? Explain. 2
    b) Describe the disease caused by skin fluke. 5

12. a) Define stress and categorize the stressors of aquaculture. 3
    b) Illustrate life cycle of a nematode. 4

13. a) Define zoonosis. Name five fish born parasitic zoonosis with causative agents. 2
    b) Describe a fish born parasitic cestodiasis and a nematodiasis with causative agents, clinical signs, prevention and control measures. 5

14. Write down short notes on any two of the followings: 3.5 X 2 = 7
    a) Temporary parasitism; b) Types of immunity; c) Biological control of fish parasites

12. a) Explain the terms 'Contamination' and 'Spoilage' of fish. 2
    b) What are the sources of contamination of fresh fish? Write down the causes of fish spoilage. 2
    c) Describe the post mortem changes occur in fish proteins, carbohydrates and lipids due to bacterial activities. 3

13. a) Name five bacteria responsible for fish spoilage in Bangladesh. Explain why incidence of bacterial spoilage is higher in fish during summer than the winter season in Bangladesh. 3
    b) Give a brief account on factors affecting the kind and rate of spoilage. 4

14. a) Briefly describe the staphylococcal intoxication occurred due to consumption of fish food. 2
    b) What is the chemical nature of toxin produced by *Clostridium botulinum* Type E? How can it be inactivated? 2
    c) Describe the occurrence, symptoms, prevention and control of *Salmonellosis*. 3

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -02 Semester-02, Final Examination' 2018
Course No: **CZM-202 (T)**, Course Title: **Coastal Zone 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)	What do you mean by the term ICZM?	1
	b)	Mention the essential elements for CZM.	2
	c)	Discuss the geomorphological structure of coastal and marine environment of Bangladesh.	4
2.	a)	What are the multiple use of coastal zone?	2
	b)	What is sea salt? Discuss the process of solar salt production in Bangladesh.	5
3.	a)	Discuss the importance of remote sensing and GIS for ICZM.	3
	b)	How will you address the risk and hazard in coastal resource utilization?	2
	c)	Why economic analysis is important in coastal resource management?	2
4.	a)	Explain ecologically critical areas and protected areas.	2
	b)	What are the threats to protected areas of Bangladesh?	2
	c)	Discuss about the various programs for natural resources conservation of Bangladesh.	3
5.	a)	Compare between vulnerability and threats.	2
	b)	"Vulnerability indicators composing the vulnerability index influence the life style of coastal communities"- Justify the statement.	2
	c)	Illustrate the vulnerability management life cycle.	3
6.	a)	"Coastal livelihood is greatly impacted by climate change'-Justify the statement.	2
	b)	Narrate the possible impacts of climate change in aquaculture and adoption options for Bangladesh.	3
	c)	Illustrate the linkages between aquaculture and livelihoods in coastal zone of Bangladesh.	2
7.	Write short notes on **any two** of the following a) Marine transport b) Sea grass ecosystem c) Coastal aquaculture d) Policy guideline for ICZM		3.5×2

Section-B

8.	a)	What do you understand by coastal planning?	1
	b)	Discuss the strategic management cycle for coastal zone management.	3
	c)	Discuss the seven tier management cycle of the coastal zone.	3
9.	a)	Why mangrove restoration and regeneration is important for Bangladesh?	2
	b)	Mention the significant of mangrove vegetation for coastal zone protection in Bangladesh.	2
	c)	Formulate your own plan and recommendation for restoration of Cakaria mangrove forest of Bangladesh.	3
10.	a)	What do you understand by coastal resilience?	2
	b)	"Strong economy and powerful management are prime factors of coastal resilience"-Explain the statement.	2
	c)	Discuss about the gaps and challenges of Bangladesh coastal zone policies and institutional framework.	3
11.	a)	Explain the main features of maritime zones of Bangladesh.	4
	b)	Discuss the importance of zoning for sustainable coastal resource management in Bangladesh.	3
12.	a)	"Coastal zone is not only an important place of natural resources but also a place of great threats'-Justify the statement.	2
	b)	Enlist the major ecosystem found in coastal areas of the Bay of Bengal.	2
	c)	What are the recent consequences faced by the Cox's Bazar ecosystem in relation to tourism activities. Formulate your own plan and recommendation to overcome these consequences.	3
13.	a)	Mention the major uses of the inshore islands of Bangladesh.	2
	b)	How can you save the different islands from land erosion?	2
	c)	Discuss the role of inshore islands in the economy of a developing country.	3
14.	Write short notes on **any two** of the following a) Ocean acidification b) Coastal greenbelt c)Disaster management model d) Seaweed in Bangladesh		3.5×2

Chittagong Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year -2 Semester-2, Final Examination' 2018
Course No: **FPH-202 (T),** Course Title: **Fish Physiology (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 fish physiology.	1
	b)	How will you apply your fish physiological knowledge in aquaculture?	3
	c)	Justify fish as a poikilothermic animal.	3
2.	a)	"Digestion is a physiological process"-explain the statement.	2
	b)	Explain the role of an acid and an alkaline solution in food digestion.	2
	c)	Define the following terms- proteolytic enzyme, zymogen and emulsification.	3
3.	a)	Write the biological definition of respiration.	1
	b)	How does countercurrent exchange work in teleost?	4
	c)	How does high temperature create respiratory problems in fish?	2
4.	a)	Define fish blood.	1
	b)	Write the components and functions of leucocytes.	3
	c)	Write the name of the organs taking part in the formation of blood cells in fish and amphibians.	3
5.	a)	Define excretion.	1
	b)	Distinguish between kidney of freshwater and marine teleosts.	3
	c)	Diagrammatically show the structural unit of a mesonephric kidney.	3
6.	a)	Classify fishes on the basis of their reproductive behaviour.	2
	b)	Summarize the breeding behaviour of Three Spine Stickleback.	5
7.	a)	Write the forms of nitrogenous wastes occur in different animals.	3
	b)	Explain the osmoregulatory mechanisms of a marine fish.	4

Section B

8.	a)	Define metabolism.	1
	b)	Write different types of metabolic activities found in fish.	3
	c)	Diagrammatically show the metabolic pathways that involved in cellular respiration.	2
	d)	Write the name of the environmental factors that affect metabolism in fish.	1
9.	a)	Point out the components of the circulatory system and how will you relate among them.	3
	b)	Draw and label a fish heart and indicates the flow of blood through the heart.	1
	c)	Between 3 chambered and 4 chambered heart, which one is more efficient and why?	3
10.	a)	Distinguish between homeotherm and poikilotherm animals.	2
	b)	Explain how dohomeotherms maintain a constant body temperature?	4
	c)	In which situation vasoconstriction mechanism is followed?	1
11.	a)	What do you mean by spermiogenesis?	1
	b)	Illustrate the spermatogenesis process in fish.	4
	c)	Draw and label a mature spermatozoon of a teleost.	2
12.	a)	Define endocrine gland.	1
	b)	Is hormone a chemical messenger? Explain.	3
	c)	Write the name and function of hormones secreted from the anterior pituitary gland.	3
13.	a)	"Fish gill use countercurrent oxygen exchange to maximize the uptake of oxygen"- justify this statement.	3
	b)	Explain how oxygen is carried out from gill to body tissue.	4
14.	Write down short notes on any ***TWO (02)*** of the followings: i) Sexuality in fishes; (ii) HPG-axis iii) Fick's Law of diffusion		3.5 X 2 = 7