Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020
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 marks. Use separate answer script for each section.*

Section A

1.	a)	"Oceanography is an interdisciplinary science"- explain.	2.0
	b)	Define topography and bathymetry. Differentiate between shore and coast.	2.0
	c)	Explain bathymetric features of the Bay of Bengal.	3.0
2.	a)	Illustrate the inner structure of the earth.	2.0
	b)	What are the different types of plates on earth?	2.0
	c)	Describe the different plate boundary interactions.	3.0
3.	a)	What are the principal constituents of sea water?	2.0
	b)	Enlist physical and chemical properties of sea water.	2.0
	c)	How can the ocean be stratified based on temperature, density and salinity?	3.0
4.	a)	What is sediment and sedimentation?	2.0
	b)	Classify sediment on the basis of source.	3.0
	c)	Mention the distribution of sediment in the oceanic environment.	2.0
5.	a)	Classify ocean current on the basis of depth.	2.0
	b)	Write down the mechanisms of upwelling and downwelling.	3.0
	c)	What do you know about long shore current and long shore transport?	2.0
6.	a)	What is local, straddling and migratory fish species?	2.0
	b)	What oceanic factors influence the biology and distribution of fish?	3.0
	c)	Can oxygen be a limiting factor in the oceanic environment? Give example.	2.0
7.		Write short notes on any 2 (two) of the following: a) El Nino and La Nino; b) Gulf stream; and c) Boundary current	3.5×2= 7.0

Section B

8.	a)	Differentiate between oceanic and continental crust.	2.0
	b)	Illustrate the mechanism of forming mid-oceanic ridge and sea island.	3.0
	c)	Which ocean is spreading faster and why?	2.0
9.	a)	Define ocean tide and lunar day.	2.0
	b)	What are the inequalities related to tidal period?	3.0
	c)	How does tide play role in fishing and transport?	2.0
10.	a)	Draw and mention the features of an ideal orbital wave of the ocean.	2.0
	b)	What is constructive and destructive wave?	2.0
	c)	Classify wave on the basis of wave length.	3.0
11.	a)	How sediments are transported to the sea?	2.0
	b)	What is gyre? Write down the name of major ocean gyres.	2.0
	c)	What is rip current? Mention the way out of rip current.	3.0
12.	a)	What is "residence time" in respect to sea water?	2.0
	b)	How does calcium carbonate compensation depth affect ooze deposition?	2.0
	c)	Characterize the Bengal Fan.	3.0
13.	a)	How new fishing ground can be identified?	2.0
	b)	What are the characteristics of the fishing grounds in the EEZ of Bangladesh?	3.0
	c)	Write down the role of ocean remote sensing and GIS in fisheries.	2.0
14.		Write short notes on any 2 (two) of the following: a) Trade wind; b) World oceans; and c) Flood tide and ebb tide	3.5×2= 7.0

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year-02, Semester-02 (July-December); Final Examination, 2020
Course Code: FPH-202(T), Course Title: Fish Physiology (Theory)
Full marks: 70 Time: 3 hours

*Answer **any 05 (five)** questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.*

Section-A

1.	a)	What do you understand the term fish physiology?	1.0
	b)	Differentiate between anatomy and physiology.	2.0
	c)	How will you co-relate your fish physiological knowledge in real-life scenario and in aquaculture?	4.0
2.	a)	What is gastric juice?	1.0
	b)	"For better utilization of nutrients, proper absorption is necessary"- what is your opinion with this statement.	3.0
	c)	Describe the pinocytosis process of nutrients from villi to circulatory system.	3.0
3.	a)	Write down the components and functions of leucocytes.	2.0
	b)	Why does the color of fish blood different from shrimp?	2.0
	c)	What are the different parts of the cardiovascular system?	3.0
4.	a)	"All fishes are ammoniotelic"- justify your answer with example.	2.0
	b)	"Some organisms use their excretory products for special beneficial purposes"- explain.	2.0
	c)	Between freshwater and marine water fishes, which one has a larger kidney and why?	3.0
5.	a)	What do you know about hypotonic and hypertonic solution?	2.0
	b)	If the concentration of salt in fish body is higher than their surroundings, what will be the osmoregulatory mechanism in that situation? - Discuss.	5.0
6.	a)	Briefly describe how environmental factors regulate the reproduction of fishes.	5.0
	b)	Differentiate between viviparity and ovoviviparity.	2.0
7.		Write down short notes **any 02 (TWO)** on following: i) Bohr effect; ii) Reproductive behavior and iii) Chyme.	3.5×2=7.0

Section B

8.	a)	Distinguish between poikilothermy and homeothermy.	2.0
	b)	How does the skin of homotherms help to regulate the body temperature?	2.0
	c)	Do you think Billfish is an endothermic fish and why?	3.0
9.	a)	Are you able to conclude the food habit of different fish species without observing the gut content?	2.0
	b)	"All types of food digestion start from the mouth"- Is it true?	1.0
	c)	Describe briefly how protein breaks down into amino acids in fish body.	4.0
10.	a)	"Keeping the cell alive, metabolism is obligatory"- do you think so? Justify your answer.	3.0
	b)	Distinguish between anabolism and catabolism.	2.0
	c)	What are the effects of warmer temperature to the fish's metabolism?	2.0
11.	a)	Distinguish between open circulatory system and closed circulatory system.	2.0
	b)	Write the function and location of pacemaker cells in fish.	2.0
	c)	How countercurrent heat exchange help to conserve heat?	3.0
12.	a)	Distinguish between concurrent and countercurrent exchange.	2.0
	b)	Does all cell get equal oxygen in fish body and why?	2.0
	c)	Do you think lungs of fishes help in respiration? Explain your statement.	3.0
13.	a)	Briefly describe the role of HPG axis in fish reproduction with schematic diagram.	5.0
	b)	Mention the specific role of GnRH, LH and FSH on reproduction in fish.	2.0
14.		Write down short notes **any 02 (TWO)** on following: i) Gill ventilation; ii) Lipid digestion and iii) Pheromones.	3.5×2=7.0

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020
Course No: FEC-202(T), Course Title: Fisheries Economics (Theory)
Full Marks: 70; Time: 3 hours

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

Section-A

1.	a)	Write briefly about aquaculture, economics and fisheries economics.	3.0
	b)	Discuss briefly how you will implement your economic knowledge in fisheries sector.	4.0
2.	a)	Define money and discuss its importance in modern economy.	3.0
	b)	Discuss the economic importance of fish farming in Bangladesh.	4.0
3.		How does environment influence on fish production in our country?	7.0
4.	a)	Distinguish between demand and want with proper example.	3.0
	b)	If quantity demanded of pabda fish falls from 15 million tons to 12 million tons due to an increase in price from Tk. 180/kg to Tk.200/kg, what is the pabda's price elasticity of demand? Interpret your result.	4.0
5.	a)	Why does demand curve slope downward left to the right?	3.0
	b)	State and discuss the law of diminishing marginal utility with limitations.	4.0
6.	a)	Define indifference curve. State the characteristics of indifference curve with diagram.	3.0
	b)	How does a consumer reach at equilibrium with the help of indifference curve and budget line.	4.0
7.		Write short notes on:	3.5 x 2 = 7.0
	a)	Point elasticity of demand and	
	b)	Efficiency of labour.	

Section-B

8.	a)	State the law of demand and supply.	3.0
	b)	Discuss briefly the contribution of capture and culture fisheries in Bangladesh.	4.0
9.	a)	Briefly discuss the law of variable proportions.	3.0
	b)	Which stage a rational producer will seek to his production?	4.0
10.	a)	Define price elasticity and cross elasticity of demand.	3.0
	b)	How does covid-19 pandemic would influence on demand for fish and fishery products in Bangladesh. Discuss.	4.0
11.	a)	Write your clear concept on Bank and Banking.	3.0
	b)	Discuss the functions of central Bank of Bangladesh.	4.0
12.	a)	Distinguish between elastic and inelastic demand.	3.0
	b)	Discuss the relationship between average cost and marginal cost with the help of a diagram.	4.0
13.		How will you start Koi fish farming in your area? Write your opinion according to your theoretical knowledge.	7.0
14.		Write short notes on:	3.5 x 2 = 7.0
	a)	Marginal Rate of Substitution (MRS) and	
	b)	Discounted project appraisal (any two)	

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year -3 Semester -2 (July-December), Final Examination, 2020
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 marks. Use separate answer script for each section.*

Section-A

1.	a)	Define coastal zone?	1.5
	b)	What do you mean by resource use conflicts in the coastal zone?	1.5
	c)	Draw and illustrate a layout of a salt pan with duration and salinity changes, with the salt production technique practiced in coastal areas of Bangladesh	4.0
2.	a)	What do you understand by coastal hard and soft structures?	2.0
	b)	Write down the significance of the coastal structures.	2.0
	c)	Describe about the applicable retreatment measures for vulnerable coastal belt of Bangladesh with specific examples.	3.0
3.	a)	Briefly discuss the maritime jurisdictions of Bangladesh related to coastal zone management.	4.0
	b)	Summarise the importance of zoning for sustainable coastal resource management in Bangladesh.	3.0
4.	a)	State the vegetation types of the shallow coastal waters.	1.5
	b)	How the mangrove vegetation act as soft engineered solution and ecological shield for coastal protection along the south-eastern coastal belt of Bangladesh.	2.5
	c)	Identify the significances of coral reef and illustrate the evolutionary pattern of reef formation.	3.0
5.	a)	How do wave erosional coasts are formed?	1.0
	b)	In which process currents affect the accumulation of sediment on secondary coasts?	2.0
	c)	Categorize the arch formation process and explain what will happen if erosion occurs in the coastal rocky cliff.	4.0
6.	a)	Enumerate the issues related to the biodiversity loss in the coastal zone of Bangladesh.	3.0
	b)	"Community participation is essential for coastal resource management"- justify.	4.0
7.	Write short notes on <u>any 2 (two)</u> of the following: a) IMTA; b) SLA framework and c) Beach nourishment		3.5×2 = 7.0

Section-B

8.	a)	Enlist the scopes of ICZM in the coastal belt of the Bay of Bengal.	2.0
	b)	How the coastal land use pattern changes overtime?	2.0
	c)	What are the features commonly occur in the sediment profiles of the littoral zone?	3.0
9.	a)	Define coastal management plan.	2.0
	b)	Design an applicable strategy management cycle for coastal zone management.	2.0
	c)	Illustrate the step-by-step seven tier strategies of the coastal zone management.	3.0
10.	a)	Explain briefly the sustainable livelihood assets pentagon with two relevant examples from each segment.	3.0
	b)	Demonstrate concisely the SLA framework with its associated components.	4.0
11.	a)	What do you mean by eco-engineering approaches for coastal protection and aquatic food production?	2.0
	b)	Write down the basic components of GIS used in ICZM especially for coastal erosion control monitoring.	2.0
	c)	Discuss the importance of GIS technics to design a sustainable coastal zone planning and management.	3.0
12.	a)	What are the factors related to the growth of the world's tourism?	3.0
	b)	Mention the tourism facilities in the coastal zone of Cox's Bazar.	4.0
13.	a)	What are the major dimensions of ICZM?	2.0
		Sketch the geomorphological structure of coastal and marine environment of Bangladesh with brief description.	3.0
	b)	"Geographical features found on coastlines and lakeshores created primarily by longshore drift"- explain the statement.	2.0
14.	Write short notes on <u>any 2 (two)</u> of the following: a) Innocent vs. transit passage; b) Natural coastal disaster and c) Carbon sequestration in coastal ecosystems		3.5×2 = 7.0

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year -2 Semester -2 (July-December), Final Examination, 2020
Course No: **FMI 202 (T)**, Course Title: **Fisheries Microbiology (Theory)**
Full Marks: 70; Time: 3 hours

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

Section-A

1.	a)	Define Fisheries Microbiology. "Microbiology is a multidisciplinary science"-explain.	4
	b)	How will you use the knowledge of microbiology in the field of Fisheries?	3
2.	a)	Describe different types of spores produced by the mold "Fungi Imperfectii".	4
	b)	Write down the physiological characteristics of *Candida* and *Saprolegnia*.	3
3.	a)	"Plasma membrane is the most dynamic structure of bacterial cell"-why?	2
	b)	Why bacterial spores are called endospores? Write down the importance of bacterial spores in fish and fishery products.	2
	c)	What is chemotaxis? Classify bacteria on the basis of arrangements of flagella.	3
4.	a)	What is fermentative yeast? Write down the physiological characteristics of yeasts.	2
	b)	List down the sexual spore and asexual spores produced by mold.	2
	c)	Differentiate between hyphae and mycelium.	3
5.	a)	Define "Bacteria". Write down the different shapes of bacteria.	2
	b)	Which structure of bacteria differentiate them as Gram positive and Gam negative? Compare the biochemical composition of Gram positive and Gam negative cell wall.	3
	c)	What is the most common source of coliform bacteria? Which features make coliform bacteria most important in food industry?	2
6.	a)	How can you define a virus? Draw and label different types of viral structure.	3
	b)	Write down the characteristics of capsid and envelope. Classify viruses morphologically on the basis of their capsid architecture.	2
	c)	What are prerequisites for the invasion and reproduction of viruses inside the host cell? Give two examples each for DNA and RNA virus.	2
7.	a)	Write down the generation time of bacteria, mold and yeast.	1
	b)	What are the differences between the growth of macro and micro-organisms?	2
	c)	What do you understand by Redox-potential of a food? How Redox-potential values of a food indicate aerobic, anaerobic and microaerophilic environment?	4

Section-B

8.	a)	What are the fundamental differences between prokaryotic and eukaryotic cells?	2
	b)	What is "Germ Theory"? Write down the Koch's postulates on the Germ Theory.	3
	c)	Why microbes are unable to penetrate the fish muscle during in-rigor period?	2
9.	a)	Define contamination and spoilage.	2
	b)	Write down the genus name of 5 pathogenic bacteria associated with fish and fishery products.	1
	c)	How nutrients, pH and a_w affect microbial growth?-discuss.	4
10.	a)	What are the evidences of spoilage of fish?	1
	b)	Discuss the importance of psychrophilic bacteria, coliform bacteria and spore forming bacteria in fish preservation and processing.	2
	c)	Distinguish between homofermentative and heterofermentative microorganisms. Write down the types of anaerobic fermentation of glucose.	4
11.	a)	What is Salmonellosis? Write down the conditions necessary for an outbreak of Salmonellosis with preventive measures.	4
	b)	Write down the ways to prevent food infection and food intoxication.	3
12.	a)	What is immunity? Differentiate between active and passive immunity.	3
	b)	Which matters are essential for the immune response of the body? Write down the name of different antigenic substances.	2
	c)	Write down the different mode of action of antibiotics against microorganisms.	2
13.	a)	Define microbial intoxication and infection.	2
	b)	Give example of 5 fish and shellfish poisoning.	1
	c)	Describe toxins, occurrence, symptoms, prevention and control of puffer fish poisoning.	4
14.		Write short notes on <u>any 2 (two)</u> of the following:	3.5 x 2 = 7
	a)	a) Bacterial growth curve; b) Microbial interactions in food and c) Sanitary index organism.	

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year -2 Semester -2 (July-December), Final Examination, 2020
Course No: FPD 202 (T), Course Title: Fish Population Dynamics (Theory)
Full Marks: 70; Time: 3 hours

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

Section-A

1.	a)	Define Fish Population and Fish Population Dynamics.	2.0
	b)	How is the number of individuals in a fish population controlled?	3.0
	c)	Show schematically that a fish population is a simple biological system.	2.0
2.	a)	Describe the advantages of fishery-dependent data over fishery- independent data.	3.0
	b)	Define fishing effort, catch per unit effort (CPUE), catchability coefficient and vulnerability.	4.0
3.	a)	How do you estimate the 95% confidence interval of mean for a population from a sample data?	3.0
	b)	Write down the assumptions on which Petersen method depends.	4.0
4.	a)	Graphically represent the difficulties of single sample method.	3.0
	b)	Derive the equations to estimate the growth parameters of Von-Bertalanffy growth model.	4.0
5.	a)	Illustrate survival curve of marine species.	3.0
	b)	"Only female ovaries are studied in fisheries work"- Explain.	2.0
	c)	Mention the different methods of fecundity estimation.	2.0
6.	a)	Mention the common types of spacing. Which one is the most advantageous and why?	3.0
	b)	Give an ideal example of CPUE in gill net fishery.	2.0
	c)	Why does the catchability coefficient vary?	2.0
7.	a)	Differentiate between MSY and MEY.	2.0
	b)	Briefly describe the Surplus Yield Model with appropriate figures.	5.0

Section B

8.	a)	What is condition factor? Mention its usefulness.	3.0
	b)	Illustrate graphically mesh selectivity curves for trawl nets of both smaller and larger mesh sizes.	4.0
9.	a)	What stands for Lc? Define it.	3.0
	b)	Linearize the S-shaped or logistic equation algebraically.	4.0
10.	a)	Mention the advantages of length measurement for recording the size of marine species.	2.0
	b)	Linearize the power curve equation.	2.0
	c)	Name six methods by which spawning season of fish could be determined.	3.0
11.	a)	Write down the assumptions of mark-recapture method.	2.0
	b)	Enlist 5 commonly used tags in fisheries study.	2.0
	c)	How are tags recovered from fish?	3.0
12.	a)	Write down the factors responsible for varying recruitment of fish.	2.0
	b)	Discuss stock recruitment relationship employing Shepherd model with different values of "b".	5.0
13.	a)	Define catch curve.	2.0
	b)	Compare and contrast between age-based catch curve and length-based catch curve.	4.0
	c)	Write down the Pauly's equation to predict natural mortality.	1.0
14.	a)	Define back calculation of fish length with Lea's formula.	2.0
	b)	Describe the stages of reproductive development in fish based on macroscopic area.	5.0

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year - 4 Semester -2 (July-December), Final Examination, 2020
Course No: FPA 202 (T), Course Title: Fish Parasitology (Theory)
Full Marks: 70; Time: 3 hours

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

Section-A

1.	a.	Briefly describe the importance and role of parasitology in fisheries.	2
	b.	Explain in details the different types of parasites according to the duration, habit and specificity on host.	5
2.		Discuss the causative agents, symptoms, pathological sign, prevention and control measure of following parasitic diseases: i. Argulosis ii. Acanthocephalan disease iii. Fish Leech iv. Ichthyobodosis	7
3.	a.	Write down the important characteristics of the major group of fish parasite.	2
	b.	Explain in details the life cycle of *Proteoceph alusambloplitis* parasite of fish.	5
4.	a.	Summarize the site of infestation, attachment organ and host of the common parasitic fauna of freshwater fish.	4
	b.	Illustrate the public health issues related to fish parasite.	3
5.		Describe the life cycle of yellow grub, *Clinostomum marginatum* with an appropriate flow diagram.	7
6.	a.	Distinguish between gill fluke and skin fluke.	2
	b.	Discuss 'Dactylogyrosis' with its symptoms, pathology and biology.	5
7.		Write short notes on **any 02 (two)** of the following: i) Eye fluke; ii) Trichodiniasis and iii) Intermediate host	3.5x2=7

Section-B

8.	a.	Define the pathogenicity.	2
	b.	Explain in details the host-parasite interaction of immune response against any parasite.	5
9.		Write down the morphology and characteristics of the following parasite: i) Cestodes; ii) Leeches; iii) Acanthocephala and iv) Hirundinea	7
10.	a.	Define the symbiosis and its importance.	3
	b.	Explain in details the different types of symbiotic relationship of host parasite.	4
11.	a.	Summarize the epidemiological triangle in Host -Parasite -Environment relationship.	4
	b.	Briefly describe the factors affecting the ecology of fish parasite.	3
12.	a.	Write down the significance of host-specificity to complete the life cycle of a parasite.	3
	b.	Illustrate the life cycle of the nematode fish parasite.	4
13.	a.	What do you mean by zoonosis.	2
	b.	Discuss major fish born zoonotic diseases with their symptom and treatment.	5
14.		Write short notes on **any 02 (two)** of the following: i) Synoecious symbiosis; ii) Enzootic symbiosis; iii) Social symbiosis	3.5x2 = 7

Chattogram Veterinary and Animal Sciences University
Faculty of Food Science and Technology
BFST 2nd year 2nd Semester Final Examination, 2019
Course Title: Food Microbiology (Theory)
Course Code: FMB-202

Full Marks: 70 **Time: 3 hours**

[Figures in the right margin indicate Full Marks. Answer any **5 (Five) questions** from each section. Use separate answer script for each section. **Split answer is strongly discouraged**.]

SECTION-A

1. a) List the factors responsible for thermal resistance of microbes. 2

   b) Complete the following table. 0.5 x 10=5

Conditions/Common Names	Causal Agents
i. Neck rot of bananas	---------
ii. Brewer's yeast	---------
iii. ----------	*Cladosporium* species
iv. Burnt/Caramel flavor of milk	---------
v. Whiskers on meat	---------
vi. --------- flavor in egg	*Streptomyces* species
vii. Stale fishy odor of fish	---------
viii. ---------	*Rhizopus stolonifer*
ix. Sulfide stinker	---------
x. Sweet curdling of milk	---------

2. a) Make a list of factors that make the eggs shelf-stable for a limited period. 2

   b) Enlist some microbial spoilages of fruits and vegetables with their causal agents. 5

3. a) Define "Gray". Enumerate the factors influencing the kind and rate of spoilage of fish. 1+4=5

   b) Classify common wines. 2

4. a) Classify food-borne illness based on etiology with examples. 4

   b) Differentiate food infection from food intoxication. 3

5. a) Define thermodurics with examples. 2

   b) Describe the source of contamination and spoilage of meat. 5

6. a) What is single cell protein (SCP)? Enlist microbes used as SCP with its nutritive value. 1+3=4

   b) Differentiate the following terms – 1 x 3=3

   i. Simmering and boiling
   ii. Drip and leakage
   iii. Evaporated milk and condensed milk

SECTION-B

7. a) List natural inhibitory substances present in different foods. 2

   b) Describe the factors that regulate the growth of microorganisms in food. 5

8. a) State the WHO standard of drinking water. 3

   b) Enumerate the process of canning. 4

9. a) Define food-borne disease outbreak. 2

   b) Design a guideline for investigating an outbreak of Botulism. 5

10. a) List five (5) fermented dairy products. 2

    b) Mention food enzymes with their sources and application(s). 5

11. a) How will you preserve fish? 3

    b) Describe the spoilage of egg. 4

12. a) Define food control and list the regulatory agencies responsible for food control. 3

    b) Outline HACCP activities of a milk industry. 4