

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries

B.Sc. Fisheries (Hons.) Year -02, Semester -02 (July-December), Final Examination, 2023

Course No: FPA-202 (T), Course Title: Fish Parasitology (Theory) Old Curriculum

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. What do you know about the concept and scope of "Fish Parasitology"?	2
	b. Why is the knowledge of fish parasitology important for aquaculture?	5
2.	a. Distinguish between protozoan and metazoan fish parasites.	2
	b. Enlist some important features of Protozoan fish parasites with examples.	5
3.	a. Categorize fish parasites depending on the spatial relationship between the parasites and their host	3
	b. Write down the major differences between facultative and pseudoparasitism.	2
	c. How can host factors influence the host-parasite interaction in fish?	2
4.	a. Define "Symbiont" and "Host".	2
	b. Explain briefly about association and dependency between the mutualist and the host under the symbiotic relationship called mutualism.	5
5.	a. What is prophylaxis?	2
	b. Enlist some prevention and control measures for the common parasitic diseases in Bangladesh	5
6.	a. What do you know about the life-cycle dependency of fish parasites?	4
	b. Give some examples of parasites found as free living to parasitic in fish.	2
	c. In what type of host, the sexual maturation of fish parasites occur?	1
7.	Write short notes on any 2 (two) of the following: a.Host specificity, b.Continuous parasitism, and c.Intermediate host	3.5x2=7
<u>Section B</u>		
8.	a. Define reservoir host.	2
	b. Briefly describe the disease leishmaniasis with causative agents disease signs and symptoms in fish.	5
9.	a.What is the role of attachment organs in the life cycle of fish parasite?	2
	b. Enlist some commonly observed attachment organs in the major fish parasites with appropriate examples.	5
10.	a. Differentiate between acute and chronic infection.	2
	b. Enumerate the mechanism involved in the infection and disease state caused by parasites in fish	5
11.	a. What is the public health concern associated with fish and fish parasites?	2
	b. Briefly describe about fish born Nematodiasis in human.	5
12.	a. What is bass tape worm?	2
	b. Describe the life cycle of bass tape worm.	5
13.	Summarize the cell and tissue reactions in fish hosts due to parasitic incidences. Give appropriate examples and illustrations where necessary.	7
14.	Write short notes on any 2 (two) of the following: a. Spiny-headed worm, b.Vector, and c.Anchor worm	3.5x2=7

Chattogram Veterinary and Animal Sciences University, Chattogram

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final Examination' 2023

Course No: **FPH-202 (T)**, Course Title: **Fish Physiology (Theory) (Old Curriculum)**

Total Marks: 70

Time: 3 hours

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

Section-A

1. a) What do you understand by physiology and anatomy? 2
b) Enlist different physiological system found in fish? Draw an interrelationship among them. 2
c) Write down the importance of studying fish physiology. 3
2. a) What do you mean by digestion and digestive system? 2
b) Briefly describe the protein digestion process in fish. 5
3. a) Distinguish between anabolism and catabolism. 2
b) Write down different types of metabolic activity in fish. 3
c) Diagrammatically show the metabolic pathways that involved in cellular respiration. 2
4. a) Write down the components and function of leucocytes. 2
b) Enlist the different circulatory system found in different animal groups. 2
c) Distinguish between open and closed circulatory system. 3
5. a) What do you know about Fick's law of diffusion? 3
b) Why do you think gill is the primary respiratory organ in fish? Justify your answer with example. 4
6. a) What are the different forms of excretory waste found in different animal groups? 2
b) "Some organisms use their excretory products for special beneficial purposes"- explain. 2
c) "Bowman's capsule is an important part of kidney" – justify. 3
7. Write short note on **any 02 (two)** of the following: 3.5 × 2 = 7
a) Endothermy, b) Absorption, c) Villi of intestine, and d) Pheromone

Section-B

8. a) Differentiate between poikilothermy and homeothermy. 2
b) How homeotherms regulate their body temperature? 5
9. a) Enlist five hormones involved in digestion process with their function. 2
b) Point out the role of bile and HCl in digestion process. 2
c) Briefly describe the factors that promote gastric emptying in fish. 3
10. a) Differentiate between neurogenic and myogenic heart. 2
b) Briefly describe the blood circulatory system found in *Labeo rohita*. 5
11. a) What do you understand by concurrent, counter current and parallel flow system? 3
b) How oxygen is transported in fish body? 4
12. a) Explain the term osmosis, hypertonic solution and stenohaline. 3
b) What are the osmotic adjustment problems faced by freshwater fish? How are they overcome? 4
13. a) What do you understand by gonochorism, reproductive cycle and iteroparity? 3
b) Illustrates and describe the HPG axis found in vertebrates. 4
14. Write short note on **any 02 (two)** of the following: 3.5 × 2 = 7
a) Chyme, b) Respiratory volume, c) Bohr effects, and d) Modes of reproduction

Chattogram Veterinary and Animal Sciences University, Chattogram
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B.Sc. Fisheries (Hons.) Year-02, Semester-02; Final Examination, 2023

Course Code: FPD-202(T) Course Title: Fish Population Dynamics (Theory) Old Curriculum

Full marks: 70; Time: 3 hours

Answer any05 (five) questions from each section. Figures in the right margin indicate full marks. Use separate answer script for each section.

Section-A

1. a) Differentiate between fish population and fish stock. 3
b) Show schematically that a fish population is a simple biological system. 4
 2. a) Define selectivity of fishing gear. 2
b) Illustrate graphically mesh selectivity curves for trawl nets and gill nets for both smaller and larger mesh sizes. 5
 3. a) Define isometric growth. 2
b) Derive the straight-line equation from the length-weight relationship. 3
c) List 5 commonly used tagging materials in fisheries study. 2
 4. a) Enlist the procedures for estimating parameters of Von Bertalanffy growth curve. 2
b) Following table presents the age and length for Bombay duck population of the Bay of Bengal. Estimate the Von-Bertalanffy growth parameters K and L_{∞} . Assume $t_0=0$. 5
- | Age (Year) | I | II | III | IV | V |
|-------------|----|----|-----|----|----|
| Length (cm) | 23 | 29 | 35 | 42 | 56 |
5. a) Describe the reason for fish death during planktonic larval stage. 3
b) Compare and contrast between age-based catch curve and length-based catch curve. 4
 6. a) Illustrate a generalised life history triangle for fishes. 3
b) Define GSI. How do you calculate GSI for abalone? 4
 7. a) Write down common reason of natural mortality. 4
b) Mention the sources of errors in mortality estimation based on CPUE data. 3

Section B

8. a) "Measure of CPUE is a poor index of stock abundance" - explain. 2
b) Show algebraically how to transform the equation of logistic curve into a straight line equation. 5
9. a) Mention the advantages of fast growth rate. 2
b) Write down the difficulties of single sample method with graphical illustration. 5
10. a) Differentiate between annual fecundity and annual potential fecundity. 3
b) Discuss the different methods used to determine spawning season. 4
11. a) Write down the factors responsible for varying recruitment of fish. 3
b) Discuss stock-recruitment relationship employing Shepherd model with different values of "b". 4
12. a) Differentiate between fishing mortality and natural mortality. 3
b) A cohort of 100 individuals belonging to a fish stock suffers a constant mortality of 20% per year. Calculate the % survival and mortality of that cohort at the end of 3 years. 4
13. a) Write down the process of mark-recapture method. 2
b) Shimul conducted marking and tagging experiments on chapila fish (*Gudusia chapra*) in kaptai Lake. In that experiment, 984 fish were tagged and released. Upon fishing one day later, 3253 fish were caught of which 68 had tags. Estimate the absolute abundance of chapila fish in Kaptai Lake. [$t = 1.96$] 5
14. a) Define MSY. 2
b) Elaborate the concept of MSY in Surplus Yield Model with appropriate figures. 5

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.) Year-2, Semester-2; Final Examination, 2023
Course Code: FEC-202 Course Title: Fisheries Economics (Theory)
Full marks: 70; Time: 3 hours

Answer any03 (Three) questions from each section where question no. 1 & 5 are mandatory. Figures in the right margin indicate full marks. Use separate answer script for each section.

Section-A

1. a) Distinguish between demand and want. 03
b) Briefly discuss the factors that influence the demand of fisheries products in Bangladesh. 04
c) Why does demand curve slope downward? 04
2. a) If quantity demand of Tilapia fish falls from 20 million tons to 12 million tons due to an increase in price from Tk.200/kg to Tk.220/kg, what is the Tilapia's price elasticity of demand? Interpret your result. 05
b) Explain the Malthusian population theory with limitation. 07
3. a) Illustrate production and production function. 03
b) Discuss the "law of variable proportion" graphically. 05
c) Why 2nd stage of production is called operation stage? 04
4. a) What is Project? 02
b) Discuss the discounted project appraisal tools with their advantages and disadvantages. 05
c) How does fish production effect on environment in our country? 05

Section B

5. a) What do you mean by utility? 02
b) State and discuss the law of diminishing marginal utility with its limitation. 05
c) How do you calculate the elasticity of demand at any point of the demand curve? 04
6. a) Define money. 02
b) Briefly discuss the function of money. 05
c) Explain the function of central bank. 05
7. a) Illustrate indifference curve. 02
b) Write the characteristics of indifference curve. 05
c) Explain the consumer's equilibrium graphically. 05
8. Write short notes on (any three): 4x3 =12
 - i. Contribution of fish farming in the economy of Bangladesh
 - ii. Explicit vs Implicit cost
 - iii. Marginal Rate of Technical Substitution (MRTS)
 - iv. Capture vs culture fisheries
 - v. Elastic vs Inelastic demand

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B.Sc. Fisheries (Hons.); Year-2, Semester-2, Final Examination 2023
Course Code: FMI-202 (T), Course Title: Fisheries Microbiology (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) Define Microbiology and Fisheries Microbiology. Write down the importance of Microbiology in Fisheries sector. 4
b) Write down the brief history of Microbiology. 3
2. a) "Microbes are everywhere"- explain. 2
b) Write down the significant contribution of the father of Microbiology. 2
c) What is scombroid fish poisoning? How does it take place? How do you prevent it? 3
3. a) Write down the Koch's postulates on germ theory. 4
b) 'Spontaneous generation' was a matter of controversy at the early history of Microbiology - why? 3
4. a) Classify bacteria on the basis of oxygen requirement. 4
b) How do redox-potential values of food indicate aerobic, anaerobic and microaerophilic environments? 3
5. a) Draw and label a typical viral particle. 3
b) Classify viruses according to Baltimore with example. 4
6. a) Why viruses are called obligate intracellular parasites? 2
b) Differentiate between DNA and RNA viruses with examples. 3
c) What is capsid and envelope of a virion? 2
7. a) Classify bacteria on the basis of flagella arrangement with examples. 2
b) How do you define aquatic bacteria? Describe the salient characteristics of marine bacteria. 5

Section-B

8. a) Explain general characteristics of viruses. 3
b) Briefly describe different steps of multiplication of bacteriophage with figure. 4
9. a) Draw and label a typical bacterial cell. 2
b) What is piscirickettsiosis? Write down the name of its causative agents along with the sign and symptoms of the disease. 5
10. a) How can you distinguish true yeast and false yeast? Describe one industrially important true yeast. 4
b) Describe one non-septate economically important mold used especially in food industry. 3
11. a) Show the steps of endospore formation in a bacterial cell with labeled diagram. 4
b) Describe the action of microorganisms on carbohydrate, protein, lipid and amino acid during post-mortem stages of fish. 3
12. a) What is Salmonellosis? Give an account of microorganism involved in different types of food infection and intoxication. 4
b) What do you mean by contamination and spoilage in fresh fish? Give examples of microbes survive at different temperatures. 3
13. a) Briefly discuss the factors affecting the kind and rate of fish spoilage. 3
b) Differentiate between bacterial flagella and pili. 4
14. a) Which group of bacteria is called as "sanitary index" organisms and why? 3
b) Describe the occurrence, symptoms and prevention of staphylococcal intoxication. 4

Chattogram Veterinary and Animal Sciences University, Chittagong
Faculty of Fisheries

B. Sc. Fisheries (Hons.), Year -02 Semester-02 (Jul-Dec), Final Examination' 2023
Course No: FOC-202 (T), Course Title: Fisheries Oceanography (Theory) Old Curriculum
Total Marks: 70, Time: 3 hours

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

Section A

1. a) How do geological layers of the earth vary in characteristics and composition? 3
b) Explain the mechanisms of ocean floor spreading and trench formation. 4
2. a) Differentiate between continental crust and oceanic crust with a schematic diagram. 3
b) Illustrate the bathymetric topographical features of the ocean bottom. 4
3. a) What are the principal constituents of seawater? Enlist the physical and chemical properties of seawater. 1+2
b) What is meant by "residence time" to seawater? Draw and explain the T-S diagram. 1+3
4. a) What is ocean tide? What causes the tide in the ocean? 1+3
b) Classify tide based on the tidal frequency and height. 3
5. a) Classify sediment based on sources. 4
b) What do you know about diversified sediment arrangement patterns? 3
6. a) Illustrate the upwelling and downwelling mechanisms in the ocean. 4
b) Describe the mechanisms of the global conveyor belt system 3
7. Write short notes on **any two (02)** of the following: 3.5×2
a) Bengal fan; b) Rip current; c) Gulf stream.

Section B

8. a) Illustrate the major timelines of the earth with the important phenomenon. 4
b) Write down the major geographical features of the world's oceans. 3
9. a) Oceanography in an interdisciplinary science.' – explain this statement. 2
b) Briefly describe the formation of the 'Coriolis effect' and 'Ekman transport'. 5
10. a) Write down the properties and role of the wave. 4
b) Classify wave based on wavelength. 3
11. a) Give an idea on earth plate tectonics with mentioning major and minor plates. 3
b) Classify earth plate boundaries with necessary drawings. 4
12. a) What is a gyre? Describe how the major ocean gyres are formed around the world. 4
b) Outline the impacts of 'El Nino' and 'La Nina' events on the climatic condition of the world. 3
13. a) Briefly discuss the constancy of composition in seawater. 3
b) Enumerate the typical vertical distribution of salinity, temperature, and density of seawater. 4
14. Write short notes on **any two (02)** of the following: 3.5×2
a) SoNG; b) Global conveyor belt; c) Challenger expedition

Chattogram Veterinary and Animal Sciences University, Chattogram
Faculty of Fisheries
B. Sc. Fisheries (Hons.) Year-02, Semester-02, Final Examination, 2023
Course No: CZM202 (T), Course Title: **Coastal Zone Management (Theory) (Old Curriculum)**
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 scripts for each section.

Section A

1. a) What do you mean by coastal zone management (CZM)? Why is it important? 3.0
b) What are the characteristics of the coastal zone? Illustrate the boundaries of the coastal zone of Bangladesh. 4.0
2. a) How does climate change affect the coastal zone of Bangladesh? 3.0
b) Describe the environmental challenges that are faced during the coastal zone management of Bangladesh. 4.0
3. a) How do mangroves create ecologically sustainable shore management? Explain with proper examples. 3.0
b) Discuss the impacts of Chakaria mangrove forest destruction on shore stabilization in the greater Chattogram area. 4.0
4. a) What are the major options for eco-friendly shore protection? 3.0
b) Discuss the major functions and impacts of Coastal Zone Management (CZM). 4.0
5. a) Enumerate the advantages and disadvantages of urban and industrial development in coastal zones. 3.0
b) Summarize the challenges and opportunities of coastal agriculture and aquaculture. 4.0
6. a) Why is Integrated Coastal Zone Management (ICZM) important for sustainable development? 3.0
b) Designate the methodology for an ICZM plan preparation in the coastal zones of Bangladesh. 4.0
7. Write short notes on any two of the following 3.5×2 7.0
a) CBCRM b) Salt production technique c) Coastal vulnerabilities

Section B

8. a) Mention the objectives and benefits of coastal zone management. 3.0
b) Discuss how land-sea interactions influence the coastal zone and coastal communities of Bangladesh. 4.0
9. a) Compose the environmental and health risks in ship recycling along with their mitigation strategies. 3.0
b) What is the Sustainable Livelihood Approach (SLA)? Show the asset categories of SLA through illustration. 4.0
10. a) What are the common causes of resource use conflicts among different stakeholders? 3.0
b) Generalize the coastal resource use conflict pattern using problem tree analysis. 4.0
11. a) How long-term strategic planning can be integrated to ensure the sustainability of coastal zone management 3.0
b) Describe the management practices for involving diverse stakeholders in coastal management plans. 4.0
12. a) How does coastal zone management contribute to sustainable economic development? 3.0
b) Discuss the socio-economic impacts of poorly managed coastal zones in the context of Bangladesh. 4.0
13. a) Formulate an ICZM framework for coastal resource management and show it diagrammatically. 4.0
c) Prepare a land use zoning map of the coastal areas of Bangladesh. 3.0
14. Write short notes on any two of the following 3.5×2= 7.0
a) Coastal tourism b) Problem tree analysis c) Coastal eco-engineering