

Chittagong Veterinary and Animal Sciences University, Chittagong

Faculty of Fisheries

B. Sc. Fisheries (Hons.) Year -2 Semester-2 Final Examination, 2014

Course No. & title: FPH-202(T); Fish Physiology

Total Marks: 70; Time: 3 hours

Answer any 05(five) of the following questions from each section

Section-A

1. a) Define 'Fish Physiology'. 1
b) Differentiate between 'Physiology' and 'Anatomy'. 2
c) Write down the importance of studying Fish Physiology. 2
d) Write down the name of different physiological systems. 2
2. a) Distinguish between poikilothermy and homeothermy. 3
b) How homeothermic animals regulate their body temperature? 4
3. a) Distinguish between anabolism and catabolism. 2
b) Briefly discuss about environmental factors that affects metabolism in fish. 5
4. a) Define respiration. 2
b) Differentiate between internal and external respiration. 3
c) Enlist different types of respiratory organs found in fishes. 2
5. a) Distinguish between spermatogenesis and oogenesis. 2
b) Briefly describe Oogenesis. 5
6. a) Define stenohaline and euryhaline. 2
b) Briefly explain the osmoregulatory mechanism of a marine water fish. 5
7. Write notes on any two of the following: 3.5×2= 7
a) Labyrinth organ
b) Pituitary gland
c) Chloride cell; and
d) Bowman's capsule.

Section-B

8. a) What do you know about digestion and digestive system? 2
b) Describe the Lipid digestion mechanism in fish. 3
c) What are the roles of bile in digestion? 2
9. a) Enlist the different types of circulatory system in different phyla. 2
b) Briefly describe the closed blood circulatory system in fish. 5
10. a) What do you know about the Bohr effect and Fick's Law of diffusion? 3
b) How carbon-di-oxide is transported in fish? 4
11. a) What do you know about reproduction and breeding behavior? 2
b) Describe the parental care behavior of three spine stickleback. 5
12. a) Enlist the environmental factors and hormones associated with reproduction. 4
b) Diagrammatically show the relationship among environmental factors, receptors, endocrine organs and reproductive activity in fishes. 3
13. a) What do you know about the gill of agnatha and gnathostomata? 2
b) Explain the mechanism of gill ventilation. 5
14. Write notes on any two of the following: 3.5×2= 7
a) Portal System;
b) Accessory respiratory organs;
c) Viviparity in fishes; and
d) Nuptial tubercle.

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B. Sc. Fisheries (Hons.) Year -2 Semester-2 Final Examination, 2014

Course No. & title: FPD-202(T); Fish Population Dynamics

Total Marks: 70; Time: 3 hours

Answer any 05(five) of the following questions from each section

Section-A

1. a) Define Fish Population and Fish Population Dynamics. 3
b) How is the number of individuals in a fish population controlled? 4
2. a) Show schematically that a fish population is a simple biological system. 2
b) Define unit stock. 1
c) Discuss briefly the common types of spacing of individuals within a unit stock. 4
3. a) Describe the advantages of fishery-dependent data over fishery-independent data. 3
b) Define fishing effort, CPUE, catchability coefficient and vulnerability. 4
4. a) Why is it important to estimate stock abundance in fisheries studies? 1
b) Distinguish between absolute abundance and relative abundance of fish. 2
c) Name at least eight methods of estimating absolute abundance of fish. 2
d) How do you estimate an area that is swept by a towed trawl net? 2
5. a) Give an ideal example of CPUE in gill net fishery. What type of relationship exists between CPUE and stock abundance? 3
b) Develop equations to estimate absolute abundance in depletion method. 4
6. a) What does the standard error suggest about the sample mean? 1
b) How do you estimate the 95% confidence interval from sample variance? 2
c) What are the assumptions of Mark-recapture method? 4
7. a) Why length data are chosen usually to measure marine species? 2
b) Why weight measurements are required for fisheries work? 1
c) How many times the weight of fish will increase if it doubles in length? Derive the straight line equation from length-weight relationship. 4

Section-B

8. a) What do you mean by the selectivity of fishing gear? Are all the individuals of a fish population vulnerable to a particular fishing technique? 2
b) Illustrate graphically mesh selectivity curves for trawl net both for smaller and larger mesh sizes. 4
c) What is condition factor? Write down its usefulness. 1
9. a) What stands for L_c ? Define it. 3
b) Linearize the S-shaped or logistic curve equation algebraically. 4
10. a) Define absolute growth and relative growth of fishes. 3
b) How do you estimate the parameters of the von-Bertalanffy growth equation by means of a Ford-Walford Plot? 4
11. a) Write down the names of different computer based graphical analysis softwares used in fish population dynamics study. 3
b) Following Table presents five modal lengths for a Hilsha shad population of the Bay of Bengal. Estimate the von-Bertalanffy growth parameters K and L_∞ . Assume $t_0 = 0$. 4

Mode	1st	2nd	3rd	4th	5th
Length (cm)	18	24	29	32	35

12. a) What is GSI? 1
b) Describe the factors and events that induce fish gonads to become active. 2
c) Illustrate reproductive stages of ovary in Penaeid prawn based on macroscopic criteria. 4
13. a) Why does recruitment of fish vary year to year? 1
b) Define L_r . 2
c) Mention the three models with equations proposed for stock-recruitment relationship. 4
14. a) Differentiate between fishing mortality and natural mortality. 3
b) Derive the equations to estimate mortality rate of a fish population. 4

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B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final Examination' 2014

Course No & Title: FOC-202(T); Fisheries Oceanography

Total Marks: 70; Time: 3 hours

Answer any 05 (five) questions from each section. The figures in the margin indicate full marks.

Section-A

1. a) What is Oceanography? 2.0
b) Write down the importance of studying Oceanography. 2.0
c) Mention the contribution of two voyages conducted in oceanographic context. 3.0
2. a) What is rip current? Draw and label the components of a rip current. 3.5
b) Describe "Thermohaline Circulation" as a Global Conveyor Belt System. 3.5
3. a) Define sediment. 1.0
b) Write down the importance of studying marine sediment. 2.0
c) Classify marine sediment on the basis of origin. 4.0
4. a) What do you understand by Fishing Ground? 1.5
b) How to detect new fishing ground using GIS technology? 3.0
c) Mention two scientific name of each category found in the fishing ground of Bay of Bengal: local, straddling and migratory fish species. 2.5
5. a) What is Perigee and Apogee tide? 2.0
b) Classify tide on the basis of "number of tide" in each tidal day. 3.0
c) Write down the mechanism of spring tide and neap tide. 2.0
6. a) How the currents are produced? 2.0
b) What are the surface current and underwater current? 2.0
c) Write down the mechanism of Upwelling and Downwelling in nearshore. 3.0
7. Write short note on any two of the following: 3.5×2= 7.0
a) *The Gulf stream* b) *Semidiurnal tide*
c) *Gyres* d) *Tide generating forces*

Section-B

8. a) Draw and label the geological layers of the earth. 2.0
b) Differentiate between oceanic crust and continental crust. 2.0
c) Briefly discuss the different types of plate boundaries. 3.0
9. a) What is "Manganese Nodule"? 1.0
b) Enumerate sediment characteristics at different provinces of the ocean. 3.0
c) Write down the pattern of sediment arrangement in the sea. 3.0
10. a) Define "Fish School"? 1.5
b) Mention some special characteristics of deep sea fishes. 2.5
c) Enumerate the mechanism of wave movement toward the shore. 3.0
11. a) Enlist the general properties of sea water? 2.0
b) How temperature impacts on the vertical stratification in seawater? 3.0
c) What is SOFAR Channel? 2.0
12. a) Define Fisheries Oceanography? 2.0
b) How Fisheries Oceanography helps to increase harvest? 2.0
c) Describe the procedures: Fishery forecasting and virgin stock identification. 3.0
13. a) What is Peninsula? 2.0
b) Distinguish between Gulf and Bay. 2.0
c) Give a general feature of the bottom topography of a typical ocean. 3.0
14. Write short note on any two of the following: 3.5×2= 7.0
a) *The age of discovery* b) *Continental drift theory*
c) *Origin of earth* d) *Calcareous Ooze*

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B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final Examination' 2014

Course No & Title: CZM-202(T); Coastal Zone Management

Total Marks: 70; Time: 3 hours

Answer any 05 (five) question from each section. The figures in the margin indicate full marks.

Section-A

1. a) Why the ICZM is popular for coastal zone management? 1.5
b) What are the objectives and benefits of coastal zone management approach? 2.5
c) Do you think this practices is essential for sustainable management of our coast?-explain. 3.0
2. a) Define coastal zone. 2.0
b) Briefly discuss the major functions and significance of CZM. 3.0
c) Illustrate the extent of coastal zone. 2.0
3. a) What is the importance of shore protection works? 2.0
b) "Goods and services of mangroves create an ecologically sustainable shore management"-justify this statement. 3.0
c) What are the major options for eco-friendly shore protection? 2.0
4. a) Briefly discuss the vulnerability components. 1.5
b) "Vulnerability indicators composing the vulnerability index influence the life style of coastal communities"- justify the statement. 2.5
c) Illustrate the vulnerability management life cycle. 3.0
5. a) Classify coastal management plans. 1.0
b) Discuss seven tier management of the coastal zone. 3.0
c) Illustrate project cycle with reference of major documents and decision. 3.0
6. a) Define seagrass with examples. 1.5
b) What are the existing facilities for a modern port?- explain. 2.5
c) Draw and discuss an ICZM framework for coastal resource management in Cox's Bazar, Bangladesh. 3.0
7. Write short note on any 02 (two) of the followings: 3.5×2= 7.0
a) CBCRM; b) Guiding principles of SLA;
c) Seaweed; d) Zoning of coastal areas.

Section-B

8. a) What do you mean by Bilge and Ballast water? 1.5
b) Define different types of coral reefs with examples. 2.5
c) Briefly discuss the impacts of bilge and ballast water in coral reef. 3.0
9. a) Discuss the importance of GIS techniques to design a sustainable CZ planning and management. 2.5
b) Enumerate the issues related to biodiversity loss in the CZ of Bangladesh with possible mitigation measures. 4.5
10. a) Define SLA. 1.5
b) Illustrate the asset categories of SLA. 2.5
c) Design the DFID approach to livelihood in the field of SLA. 3.0
11. a) What are the issues related to coastal aquaculture expansions? 1.5
b) Discuss the impacts of shrimp farming in the coastal area of Bangladesh with specific reference of Chakoria Sunderban. 2.5
c) Briefly describe the uses of the southeastern coastal zone of Bangladesh. 3.0
12. a) What do you understand by critical areas? 1.5
b) Discuss on the assessment tools of ICZM. 2.5
c) Design the methodology for ICZM plan preparation of islands. 3.0
13. a) What are the characteristics of coastal zone? 1.5
b) What do you mean by landward and seaward boundary of CZ with examples? 2.5
c) What are the major economic activities in the coastal area of Bangladesh and how coastal people benefited from that activities? 3.0
14. Write short note on any 02 (two) of the followings: 3.5×2= 7.0
a) GIS in ICZM; b) PRA;
c) MPAs; d) Land-sea interaction.

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B. Sc. Fisheries (Hons.) Year -02, Semester-02, Final Examination' 2014

Course No & Title: FPA-202(T); Fish Parasitology

Total Marks: 70; Time: 3 hours

Answer any 05 (five) questions from each section. The figures in the margin indicate full marks.

Section-A

1. a) Give your concept on parasite and parasitism. 2
b) Discuss the contribution of parasitology in fisheries science. 2
c) Enumerate the scope of parasitology in fisheries and aquaculture. 3
2. a) What do you know about infective stage? 2
b) Write down the name of infective stages of digenetic trematode, cestode and nematodes. 2
c) Briefly describe the life cycle of a digenean parasite which develops an infective stage in fish host. 3
3. a) What do you understand by parasitic infestation? 2
b) Describe the following parasitic diseases of fish with their causative agents, symptoms, pathology and control measures: 2.5x2=5
i) Dactylogyrosis and ii) Lernaeasis
4. a) Define stenoxenous and heteroxenous parasite. 2
b) What are the concepts of definitive hosts and intermediate hosts? Explain with examples. 2
c) Briefly discuss the Crofton's concept on parasitism. 3
5. a) What do you understand by host-parasite-environment interactions? 2
b) Discuss cell and tissue reactions of fishes due to parasitic invasions. 3
c) Mention different types of reactions due to parasitic invasion to fish. 2
6. a) What is ectoparasitism? 2
b) Give the names of common ectoparasites infesting fishes. 2
c) What are the symptoms exhibited by a fish infested with ectoparasites? 3
7. Write notes on any two of the followings: 3.5x2=7
a) Prevalence and intensity of infestation
b) Infrapopulation and suprapopulation
c) Hyperparasitism and accidental parasitism

Section-B

8. Describe the identity of monogenetic flatworm, spiny headed worms, cestodes and round worms. Give diagrams and examples from each group. 7
9. a) Define host specificity and symbiosis. 2
b) Describe various types of symbiotic relationship in fish. 5
10. Describe the common metazoan parasitic diseases of fish with their causative agents, symptoms and control measures. 7
11. a) What is Ichthyophthiriasis? Write down the susceptible host fishes of Bangladesh. 2
b) Describe the life cycle and nature of damage of its causative agent on host fishes. 3
c) What control measures can be taken against its infestation? 2
12. a) Write importance of fish borne zoonosis in public health concern. 2.5
b) Describe a fish borne nematodiasis. 4.5
13. a) What is stress? 2
b) Describe the physiological factors of parasitic diseases of fishes. 2
c) Discuss the mechanism of infection into disease. 3
14. A single pond with an area of 40x20 m² and depth of 2m contain carps. Fish are seen to be heavily infected with *Argulus*. The pond can not be drained. Dipterex is available in 50% active solution and 0.25 ppm dose is generally used to treat the pond. Now answer the following questions: 7
i) Calculate how much Dipterex will be required to treat the pond?
ii) Name the other chemicals used for controlling disease.
iii) Is there needed any second treatment and why?

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B. Sc. Fisheries (Hons.) Year -2 Semester-2 Final Examination, 2014

Course No. & title: FMI-202(T); Fisheries Microbiology

Total Marks: 70; Time: 3 hours

Answer any 05(five) of the following questions from each section

Section-A

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|----|----|--|---|
| 1. | a. | Define microorganism and microbiology. | 2 |
| | b. | Mention the scope of microbiology and briefly discuss the role of microbiology in nature. | 5 |
| 2. | a. | What is "Germ theory"? | 1 |
| | b. | Write down the Koch's postulates on the germ theory. | 2 |
| | c. | Write down the contribution of Louis Pasteur in the development of microbiology. | 4 |
| 3. | a. | Define bacteria. | 1 |
| | b. | Draw and label a typical bacterium. | 3 |
| | c. | How can you classify bacteria on the basis of arrangements of flagella on the surface of bacterial cell? | 3 |
| 4. | a. | What is bacterial growth curve? | 1 |
| | b. | Draw an imaginary growth curve and describe the different stages of bacterial growth. | 3 |
| | c. | What do you mean by generation time? | 3 |
| 5. | a. | Explain the terms-genome, genes, codons and transcription. | 4 |
| | b. | Enumerate the basic steps of genetic engineering. | 1 |
| | c. | What is genetic recombination? | 1 |
| | d. | List the ways through which genetic recombination can occur in bacteria. | 1 |
| 6. | a. | Briefly describe the fresh water habitat of microorganism. | 5 |
| | b. | What are the different enzymes involved in DNA replication of bacteria? | 2 |
| 7. | a. | List the characteristics of virus. How do viruses resemble cells? | 2 |
| | b. | Classify fungi based on their morphology and habitats. | 2 |
| | c. | Give the distinguishable features of fungi and bacteria. | 3 |

Section-B

- | | | | |
|-----|----|---|---|
| 8. | a. | Give a classification of food borne disease. | 2 |
| | b. | Define food borne infection and intoxication | 2 |
| | c. | Give some examples of fish borne infections and intoxication. | 3 |
| 9. | a. | Explain the term antimicrobial agents. | 2 |
| | b. | Classify antibiotics based on the range of bacterial species against which they are active. | 5 |
| 10. | a. | Why bacterial spores are called endospore ? | 1 |
| | b. | Why spores are more heat resistant than vegetative cells? | 2 |
| | c. | Show the steps of spore formation in a bacterial cell with labeled diagram. | 4 |
| 11. | a. | Write down the characteristics of exotoxin and endotoxin produced by bacteria. | 4 |
| | b. | Define mutation. | 1 |
| | c. | Explain different types of mutations. | 2 |
| 12. | | Explain the following terms with examples: lipolytic bacteria, saprophytic bacteria, osmophilic bacteria, halophilic bacteria, beer yeast, bread yeast and film yeast | 7 |
| 13 | a. | Define microbial contamination and spoilage of fish. | 2 |
| | b. | What are the evidences of spoilage of fish? | 2 |
| | c. | How harvesting method and temperature influence the kind and rate of spoilage of fish? | 3 |
| 14. | a. | What is botulism? | 1 |
| | b. | Write down the characteristics of its causative agent. | 2 |
| | c. | Briefly discuss the disease food involved and treatment of salmonellosis. | 4 |

Chittagong Veterinary and Animal Sciences University, Chittagong
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B. Sc. Fisheries (Hons.) Year -2 Semester-2 Final Examination, 2014

Course No. & title: FEC-202(T); Fisheries Economics

Total Marks: 70; Time: 3 hours

Answer any 05 (five) of the following questions from each section

Section-A

1. How do you define fisheries economics? Why does a student of fisheries sciences need to study economics? 7
2. Briefly explain the concepts of utility and marginal utility. What does the law of diminishing marginal utility state? Use graph to illustrate your answer. 7
3. a) What do you mean by production and production function? 2
b) Briefly discuss the three stages of production. 5
4. What is Bank? Discuss the functions of central Bank. 7
5. a) What do you mean by capture and culture fisheries? 3
b) How does fisheries sub-sector contribute in the economy of Bangladesh? 4
6. a) Define gross margin and farm profitability. 3
b) Why stage II is called the stage of operation? 4
7. What is money? Discuss about the functions of money? 7

Section-B

8. Distinguish between the concept of demand and want with their proper example. If quantity demanded of Hilsha fish falls from 10 million tons due to an increase in price from Tk. 100/Kg to Tk. 110/Kg, what is Hilsha fish's own price elasticity of demand? Interpret your result. 7
9. a) Mention the difference between elastic and inelastic demand. 3
b) Derive algebraically the relationship between average cost and marginal cost. Show this relationship with the help of diagram. 4
10. Discuss the discounted project appraisal techniques with their advantages and disadvantages. 7
11. Discuss the environmental aspects of fisheries in our country. 7
12. What do you mean by production and production function? Explain the law of diminishing return with the help of diagram. 7
13. How would you draw marginal revenue curve from a straight line demand curve? Derive marginal revenue from the following demand curve: $p = 100 - 3q$ when $q = 10$. 7
14. Write short notes on- 3.5×2= 7
a) Grameen Bank
b) Pay-Back Period