



College of Agriculture, Fisheries and Forestry

School of Veterinary Science and Animal husbandry

Department of Fisheries

Trade Diploma in Aquaculture

AQC 510 – Fish Diseases and Health Management in Aquaculture

Trimester 2 – 2017

Final Examination Paper

Sections	Category	Marks
A	Multiple Choice	10
B	True/False	10
C	Short Answer	20
D	Long Answer	30
E	Essay	30

DURATION- 3 HRS

[TOTAL PAGES – 6]

Instruction to the Students

1. You are allowed 10 minutes reading time during which you are not to write.
2. Begin each section on a fresh page and use both sides of the sheet.
3. Write your candidate number at top of each attaché sheet.
4. For all sheets of paper on which rough/ draft work has been done, cross it through and must attach it to your answer scripts
5. Write clearly the numbers attempted on the top of each sheet.

Section A- Multiple choices

(1 mark each)

Answer **All Questions** from this section

1. Natural, full-strength seawaters salinity ranges from 30 to 40 ppt. What is the salinity range for freshwater?
 - a. Between 0.5 ppt to 1 ppt.
 - b. Between 0 ppt to 1 ppt.
 - c. More than 1.5 ppt.
 - d. Less than 0.5 ppt.

2. What are some of the following is not physical deformities that one needs to observe when determining if fish is sick:
 - a. Color change and abdominal swelling most commonly caused by an infectious pathogens
 - b. Scoliosis and lordosis.
 - c. Eye lesions (unilateral lesions) often indicate a possible traumatic cause, especially in large fish.
 - d. staying near the surface of the water because of hypoxia or *Scraping the body because of parasite irritation*

3. What are the major sources of Nitrogen input in any aquatic environment?
 - a. Uneaten food
 - b. Fish excretions
 - c. Dead plants and animals
 - d. All of the above

4. What is Fin ulceration?
 - a. Gangrenous loss of tissue
 - b. Hyperactivity of epithelium and goblet cells.
 - c. Also referred to as Fin rot or erosion
 - d. Both A and C

5. Development of two distinct temperature zones in a pond is referred to as:
 - a. Temperature stress
 - b. Temperature stratification
 - c. Temperature zonation
 - d. Temperature regeneration

6. Which one of the following is correct:
- Heterocercal tails fins suggest that fish are slow swimmers and survive well in water free of much movement.
 - Lateral lines in fish contain nerves that detect water vibrations and motion and this is what helps keep fish in schools, is part of the nervous system.
 - Inflammation is a protective response & an attempt by the body to wall off and destroy the invaders.
 - During anesthesia the fish becomes depressed that is it becomes violent and struggles trying to escape.
7. Dissolved oxygen is highest in ponds during:
- Sunset
 - Sunrise
 - Mid-day
 - Mid-night
8. Which of the following are chemical stressors:
- Poor water quality, pollution, microorganisms & metabolic wastes.
 - Microorganisms, pollution, dissolved gases & Diet composition
 - Diet composition, metabolic wastes, pollution & poor water quality.
 - None of the above.
9. Which of the following are techniques used during postmortem of fish?
- Preserving parasites and culturing bacteria only
 - Culturing skin lesions, bacteria, visceral organs only
 - Preserving parasites, culturing bacteria and Sampling fungi and viruses
 - All of the above
10. What gives the fish their color?
- Epidermis
 - Guanine
 - Pigment cells
 - Scales

Section B- True/False

(1 mark each)

1. Most of the equipment required for fish disease diagnosis is inexpensively available.
2. If the proper amount of anesthetic is added, the fish should be immobilized in less than 20 minutes.
3. Aquatic animals hold a greater productive potential than terrestrial animals.
4. Necropsy involves taking out internal organs and preserving them for later examination and diagnosis.
5. Disease is any condition of an aquatic animal that impairs normal physiological function.
6. Oxygen is the least important water quality factor for proper fish health, but it is poorly soluble in water.
7. Oxygen concentration is highest near sunset because net oxygen production occurs during the day.
8. Adding zeolite is a safe and effective way of increase ammonia quickly.
9. Fish species differ in their optimal pH range. A pH range of 6.5 to 9.0 is generally recommended for freshwater fish.
10. The metabolic activity of fish and other aquatic organisms produces acids. In a closed system, such as an aquarium or pond, these acids tend to gradually increase pH.

Section C- Short Answer

(2marks each)

Answer **All Questions** from this section

1. Explain the differences between the following:
Temperature Stress
Temperature Stratification
2. Why is it important to determine if the owner is amenable to the euthanization of his/her fish for the determination of a diagnosis?
3. What is New Tank Syndrome and what is the major cause of ammonia accumulation in aquariums?
4. Explain the reasons of wearing a latex glove when handling fish during fish biopsy
5. Explain the differences between Hyperthermia and Hypothermia.
6. Explain the difference between Sedation and Anesthesia
7. What is the difference between Acute Environmental Hypoxia and Chronic environmental Hypoxia?

8. Explain the function of Epidermis and the reasons why it is important to fish?
9. There are two categories of diseases found in fishes. Name the two categories and explain what each of them of them is caused by?
10. Why is it wise or very effective to biopsy gills and skin of a fish?

Section D- Long Answer

(5 marks each)

Answer **All Questions** from this section

1. Discuss the treatments of Too High pH problem in Aquaria and Ponds?
2. Explain how do Aquatic animals hold a greater productive potential than terrestrial animals?
3. Explain the five causes of environmental Hypoxia?
4. Owners may present fish for diagnosis that have recently died; Explain reasons why such fish are often of no diagnostic value?
5. List down five ways in which viscera of fish is unique from those of mammals.
6. Explain the protective barriers possessed by fish to protect against infection.

Section E- Essay

(15 marks each)

Choose only **TWO** questions out of the **FOUR** below and write an essay (Minimum 250 words).

1. Choose a problem from the list. Define the problem, discuss the causes of that problem and explain how to treat this problem.
 - Temperature stress
 - Ammonia poisoning
 - Too high (alkaline) pH
 - Improper salinity
2. Write an essay discussing the 7 characteristics that need to be considered when choosing a species for Aquaculture.

3. Explain Stress, types of stressors and the effect of stress on fish's protective barriers against diseases.
4. Write an essay explaining what environmental hypoxia is. Discuss the sources and usage of oxygen. Also explain the causes and treatment of environmental hypoxia.

.....The End.....