



**College of Agriculture, Fisheries and Forestry**  
**School of Veterinary Science, Animal husbandry & Fisheries**  
**Department of Fisheries**

*FCU 500 - Fisheries Biology and Coral Reef Management*

**BACHELOR OF SCIENCE IN FISHERIES**

*Semester 1 - 2018*

## **Final Examination Paper**

**Part I: Objective:**

Section A	40 %	10
Section B	True or False	10
Section C	Multiple Choice	10
Section D	Matching	10
	Short Answer	10

**Part II: Subjective:**

Section A	60%	50
Section B	Long Answer	10
	Essay	

**DURATION - 3 HRS**

**[TOTAL PAGES – 9]**

Instructions to the Students

1. You are allowed 10 minutes reading time during which you are not to write.
2. There are 9 pages all together including the cover page.
3. Begin each section on a fresh page and use both sides of the sheet.
4. Write your candidate number at top of each attaché sheet.
5. For all sheets of paper on which rough/ draft work has been done, cross it through and must attach it to your answer scripts.
6. Write clearly the numbers attempted on the top of each sheet.

## **Part I: Objective Type**

### **Section A: True or False** (1 mark each)

(10 marks)

- 1) Intertidal zones, the areas that are close to the shore, are constantly being exposed and covered by the ocean's tides. A small array of life can be found within this zone.
- 2) Some reefs are recovering, but scientists say that between 50% and 70% of the world's coral reefs are now endangered and predict that global warming could exacerbate this trend.
- 3) A reported 33,400 species of fish, including bony and cartilaginous fish, had been described by 2016, more than all other vertebrates combined. About 48% of fish species live in saltwater.
- 4) Freshwater ecosystems cover 0.78% of the Earth's surface and inhabit 0.009% of its total water.
- 5) Freshwater ecosystems contain 20% of the world's known fish species.
- 6) Behavioral adaptations - relate to how the organism's metabolism works.
- 7) Seawater is much denser than air – as a result, there are vast numbers of microscopic organisms suspended in it.
- 8) Bryozoans are plant colonies that have hundreds of zooids coming together.
- 9) Adaptations are less and varied but they are generally grouped into 3 main categories.
- 10) Within the tissues of hard corals polyp lives the microscopic multicellular cell called the zooxanthellae.

**Section B: Multiple Choice** (1 mark each)

(10 marks)

- 1) Which one of the following statement best describes what a mutualism relationship is?
  - A) A kind of action that occurs as two or more objects have an effect upon one another
  - B) The interaction between two different organisms living in close physical association
  - C) The relationship benefits both species
  - D) The interaction helps one species but does nothing for the other.
  
- 2) Which one of the following statement best describes what a commensalism relationship is?
  - A) The interaction helps one species but does nothing for the other.
  - B) A kind of action that occurs as two or more objects have an effect upon one another.
  - C) The interaction between two different organisms living in close physical association.
  - D) Where a species depending on another species is harming while living on it.
  
- 3) What is marine protected area?
  - A) Protected areas of seas, oceans, estuaries or large lakes.
  - B) The protected areas have long been considered as territories where the nature is to be protected and where “normal” use of the land is to be suspended.
  - C) MPAs does not restrict human activity for a conservation purpose that is to protect natural or cultural resources.
  - D) Both A and B.
  
- 4) Who can reduce local human impacts on corals through enforcement of fisheries regulations, establishing effective marine protected areas, pollution control and other interventions?
  - A) Local communities and reef managers.
  - B) Stakeholders and responsible authorities.
  - C) Ministry of Fisheries.
  - D) All of the above.

- 5) In order to have a healthy reef, recommended action to support reef habilitation is important. Which of the following does not support reef rehabilitation?
- A) Prevent damage occurring in the first place.
  - B) Identify and mitigate the cause of local human damage to the reef before attempting any rehabilitation.
  - C) Cooperate with local authorities.
  - D) Use management interventions to encourage natural regeneration.
- 6) Some strategies that female should be careful about when selecting male are:
- A) Energy investment in eggs.
  - B) Migration and brooding.
  - C) Sex ratio.
  - D) Both A and B.
- 7) Define the term polyploidy.
- A) One set of chromosome.
  - B) More than two sets of chromosomes.
  - C) Critical difference between odd and even sets.
  - D) Both B and C.
- 8) What is gynogenesis?
- A) One genome from female in egg.
  - B) Females produce diploid eggs, use sperm to stimulate development male genome not used.
  - C) Females produce diploid eggs, no sperm used.
  - D) Uses sperm to restore ploidy.
- 9) What is behavioral adaptation?
- A) Learned or inherited behaviors that help organisms to survive.
  - B) How the organism's metabolism works.
  - C) It enables the organism to regulate their bodily functions, such as breathing and temperature.
  - D) Physical features of the organism.

10) Why is scientific research and social science important?

- A) It contributes to the findings best fit the solution of an area of marine research.
- B) Estimate the numbers of marine organisms, the community of organisms or assess the effects of introduced species.
- C) It aids in history of a particular marine species.
- D) Both A and B.

**Section C: Matching.****(1 mark each)****(10 marks)****Write the correct letter beside each number.**

1) Scientific Research.	(A) More than two sets of chromosomes.
2) Anthropogenic.	(B) Perform many varied tasks on their area of specialisation.
3) Fractional spawners.	(C) Ocean dumping.
4) Batch spawners.	(D) Increase in the sea temperature can cause this phenomenon.
5) Social Science Research.	(E) Produce eggs continuously, spawn frequently.
6) Semelparity.	(F) Understanding the “people side” on marine resource.
7) Iteroparity.	(G) Single reproductive season release all eggs in a short period.
8) Coral Bleaching.	(H) Spawn and then die.
9) Parthenogenesis.	(I) Repeated reproduction.
10) Polyploidy.	(J) Females produce diploid eggs, no sperm used.

**Section D: Short Answer**

**(1 mark each)**

**(10 marks)**

**Attempt all questions.**

1. Give one main importance of small plants and algae.
2. Differentiate between interaction and symbiosis.
3. What is bioerosion?
4. List some threats to corals.
5. Why do corals die when you touch them?
6. What is the structural adaptation give an example?
7. List two anthropogenic threats of aquatic organisms and corals.
8. What is the main role of planning and stakeholder cooperation?
9. Who should design a management plan?
10. What is a fisheries management plan?

**Part II: Subjective Type**

**Section A: Long Answer (5 marks each) (50 marks)**

**Attempt all questions**

- 1) List and explain the two types of ecosystems giving an example of each.
- 2) Draw a diagram with labelling to show the classification of the open ocean zones according to the depth and light.
- 3) Discuss what bioerosion with three bioeroders and examples.
- 4) Explain in detail how corals grow.
- 5) List and explain at least three examples of soft corals and hard corals.
- 6) List and explain at least five growth forms of corals.
- 7) Discuss the reproduction modes in corals.
- 8) Discuss at least two advantages and disadvantages of having marine protected areas.
- 9) List and explain three ways in which you can carry out the design awareness methods or techniques on sustainable coral reef management.
- 10) Explain in detail five ways to achieve resource restoration.



**Section B: Essay**

**(10 marks)**

**Choose one topic from the two given below.**

1. Write an essay on the effects of natural and anthropogenic impacts to marine resources and coral reefs. (Approximately: 250-300 words)
2. Write an essay on the unique adaptations of different marine organisms.  
(Approximately: 250-300 words)

**The End**