



FIJI NATIONAL UNIVERSITY
College of Agriculture, Fisheries & Forestry
School of Agricultural Sciences and Forestry
Department of Soil Science & Agril. Engineering

FINAL EXAMINATION: 2018

Bachelor of Science in Agriculture IIIrd year: Trimester Ist

REMOTE SENSING AND ITS APPLICATION IN AGRICULTURE: AGR 703

Total marks: 100

Time allowed: 3 Hours and 10 mins allowed for reading at the beginning of exam.

INSTRUCTIONS:

This paper consists of four (4) pages. Please check to see that your paper is complete.

Answer all questions in the answer booklet.

- Number your answers correctly in the provided answer booklet.
- Write your student ID number on all pages that you use including any additional sheet paper.
- Printed or written study materials are not allowed into the examination hall.
- Mark values appear at the end of each question or part thereof.

• **“MOBILE PHONES ARE STRICTLY NOT ALLOWED”**

SECTION NO.	TYPE	TOTAL MARKS
I	MULTIPLE CHOICE	12.0
II	FILL IN BLANK	9.0
III	TRUE OR FALSE	9.0
IV	ABBREVIATIONS	10.0
V	LONG ANSWER	60.0
TOTAL MARKS		100

Part I: Choose the right answer

8 x 1.5 = Total 12 marks

1. An increase in Lime stone will result in rapid?
 - a. Increase in reflectance
 - b. Decrease in reflectance
 - c. No effect in reflectance
 - d. None
2. What is/are the function(s) of GIS in remote sensing?
 - a. Data acquisition
 - b. Mapping
 - c. Display
 - d. All
3. If spatial resolution is smaller, what will be the resolving power of the sensor?
 - a. Smaller
 - b. Greater
 - c. Same
 - d. None
4. Which of the following resolution best describes “the acquisition of data has been recorded on 5 dates”?
 - a. Spectral
 - b. Temporal
 - c. Radiometric
 - d. None of the above
5. Which of the following spectral rays is used for vegetation properties?
 - a. Gamma rays
 - b. Ultraviolet
 - c. Near Infrared
 - d. None of the above
6. The smallest discrete element which make up a raster image is referred as
 - a. Digital number
 - b. Pixel
 - c. Noise
 - d. Point
7. A raster module in the Arc GIS package is known as?
 - a. Pixel
 - b. Legend
 - c. Grid
 - d. None of the above
8. The part of the drawn map explaining the meaning of symbols used to code the depicted geographical elements is known as?
 - a. Layer
 - b. Label
 - c. Legend
 - d. None

Part II: Fill in the blank space with proper word

6 x 1.5 = Total 9 marks

1. Geosynchronous orbit is km above the earth surface at the equator.
2. Smallest change in intensity level can be detected by the sensing system in resolution.
3. In resolution generally we consider what wavelengths we use.
4. NASA's Landsat satellite programme was earlier known as
5. In remote sensing, optical sensors detect solar radiation reflected or scattered from the earth
6. A 1/100,000 or 1: 100,000 means that one unit of measure on the map equals 100,000 of the same unit on the earth.

Part III: State 'True' or 'False'

6 x 1.5 = Total 9 marks

1. SPOT satellite remote sensing programme was launched by United States of America?
2. An aerial camera is an active sensor that collects a direct, continuous tone, pictorial image in the visible light range.
3. Image depends on the wavelength response of the sensing instrument and the emission of the target.
4. Map making and geographic analysis are new technologies.
5. In remote sensing energy source is not required to study the target of interest
6. Remote sensors cannot be operated in in bad weather.

Part IV: Write the full form of given abbreviations

8 x 1.25 = Total 10 marks

1. SWIR
2. SPOT
3. NASA
4. AVHRR

5. ETM
6. LIDAR
7. IRS
8. FLIR

Part V: Write the answer for given questions

ATTEMPT ANY FIVE (5)

5 x 12 = Total 60 marks

1. What do you understand with GIS? Demonstrate GIS components and discuss how GIS work. What are tasks that can be completed using GIS technologies?
2. Define remote sensing? Discuss geo-referencing of satellite data. Explain the advantages and restriction of satellite scenes.
3. Give the classification of remote sensing based on the source of energy or radiation. Elaborate the frequency ranges of Electromagnetic Spectrum.
4. Demonstrate the type of remote sensing systems? Briefly describe:-
 - a) Air born remote sensing
 - b) Microwave remote sensing.
5. Provide the application of Remote Sensing in given areas.
 1. Disaster warning and assessment
 2. Meteorology
 3. Geology
 4. Agriculture
 5. Botany- forecasting crop yields.
 6. Climate
6. Draw a neatly labeled sketch of the following remote sensing systems:
 - a) Remote Sensing Process Components.
 - b) Infrared remote sensing.

THE END



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Department of Fisheries

Bachelor of Science in Fisheries

FSC 701 – Advance Aquaculture

Trimester 1 – 2018

Final Examination Paper

Sections	Category	Marks
Part I	Objective Type Questions	40%
A	True/False	20
B	Short Answer	30
Part II	Subjective Type Questions	60%
A	Long Answer	40
B	Essay	20

Duration: 3 Hours & 10 minutes reading time

Total Pages: 5 PAGES

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.

Part I Objective Type Questions

(40 Marks)

Answer ALL questions from Sections A & B.

Section A- True/False

(20marks)

1. The term fish is most strictly used to describe any animal with a backbone that has gills throughout life and has limbs, if any, in the shape of fins.
2. Shellfish are endoskeleton-bearing aquatic invertebrates, which includes various species of molluscs, crustaceans, and echinoderms.
3. The term aquaculture is widely used to denote culture of aquatic animals and plants in fresh, brackish and marine environments.
4. New fisheries laws to protect the natural resources decreased the demand for favored species which created situations where adoption to aquatic farming became inevitable.
5. Aquaculture production can be organized according to market demand in respect to size, quantity, etc.
6. Aquaculture contributes to the biodiversity loss incurred due to major development project such as construction of a hydropower reservoir.
7. Aquaculture is helping ease the fishing pressure of the intensively fished foreshore areas.
8. Grow-out produces the seed or young fish used to stock growing facilities.
9. Processing changes the form of the fish products into something more desirable to consumers.
10. Most seaweed farming is high technology and not suited to the lifestyles of rural villagers who may have few other income generating opportunities.
11. Coral farming should best be introduced as part of a wider reef awareness and management context, and as an economic incentive for conservation.
12. One disadvantage for many Pacific Islands countries is that they don't have extensive mangroves that can be used for farming crabs in simple enclosures.
13. One advantage of culturing *L. stylirostris* over culturing *P. monodon* is that it can tolerate high salinities, and therefore does not require brackish conditions, which are scarce or absent in many Pacific Islands countries.

14. *Pinctada margaritifera* and *Pteria penguin* both are introduced in Fiji.
15. Seaweed products can be sold fresh or dried, and are suited for eco-labelling.
16. There are only two species of carp in Fiji.
17. Puntius is one of the organisms that is cultured here in Fiji.
18. Nursery, rearing and stocking ponds are stocked with spawn, fry and fingerlings respectively.
19. The stocking densities followed vary according to the level of management that can be under taken.
20. One disadvantage of stocking early in the morning is that the temperature of the water may be high resulting in stress to the stocked fish.

Section B- Short Answer

(20marks)

Answer ALL Questions.

1. State 4 reasons for draining and drying ponds.
2. Enlist 4 possible water sources for aquaculture farm sites.
3. What effects do weed fish and predatory fish have in a pond?
4. Describe two different types of lines used in topography plans.
5. What is a ranging pole and explain its role?
6. State four soil qualities upon which the productivity of fish ponds depended on.
7. What is a freeboard referred to in ponds?
8. State two important factors to consider when making a dyke.
9. What are two ways in which water coming through inlet can be increased in DO?
10. The number of ponds constructed depends on many factors. List down 4 determining factor for number of ponds.

Part II Subjective Type Questions

(60 Marks)

Answer questions from Sections A-B.

Section A- Long answer

Answer ALL Questions.

(40 marks)

1. Draw labeled diagrams of two water outlet designs that prevent loss of fish from pond. (3 marks)
2. Explain why aquatic animals have higher growth rates when compared to terrestrial animals? (3 marks)
3. Explain the 5 main activities of aquaculture. (5 marks)
4. Discuss three advantages of culturing coral in Fiji. (3 marks)
5. Discuss 5 important characteristics that need to be assessed at potential aquaculture site during initial site surveys. (5 marks)
6. Write a paragraph explaining the socio-economic foundation of aquaculture. (4 marks)
7. If a pond has a surface area of 1 500 m² and the soil of the pond is loam (seepage losses 8–20 mm/day). Calculate the volume (liters) of water needed to compensate for seepage losses during 6 months. (4 marks)
8. If you were to puddle a pond with a surface area of 2 500 m²; the soil of the pond bottom is Loamy clay (seepage losses 1-2 mm/day). Calculate volume (liters) of water needed to compensate for seepage losses during 6 months after puddling. (4 marks)
9. The water surface area of your pond is 3 500 m² and you plan to grow fish from April to September. Calculate the volume (liters) of total evaporation for these months. Use the following Class A Pan evaporation rates.

Month	Evaporation rate (mm/day)
April	56
May	63
June	68
July	75
August	84
September	79

(4 marks)

10. Discuss five requirements of a suitable piscicide.

(5 marks)

Section B: Essay

(20 marks)

Choose **TWO** question from the **THREE** given and write an essay of approximately 250 words.

1. Write an essay explaining the pre-stocking management steps for a drainable pond undrainable pond. Thoroughly explain the method and purpose of each step.
(10 marks)
2. Draw diagram of a recirculating aquaculture system and discuss how to system operates. Discuss in detail what happens at every filtration stage.
(10 marks)
3. Write an essay discussing steps taken during site survey for a potential aquaculture farm site. Discuss methods and purpose for every step.
(10 marks)

...THE END...