



**FIJI NATIONAL UNIVERSITY**  
COLLEGE OF AGRICULTURE, FISHERIES AND FORESTRY  
SCHOOL OF AGRICULTURAL SCIENCES & FORESTRY  
Department of Soil Science & Bio Systems Engineering  
B.Sc Fisheries III<sup>rd</sup> year: Trimester II<sup>nd</sup>, 2019

**Remote Sensing and GIS Applications: AGR 705**

**Writing Time: 3:00 hours**

Reading Time: extra 10 minutes allowed at the beginning of the exam

**Total Marks: 100**

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**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.
- Calculators are permitted.

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

SECTION NO.	TYPE	TOTAL MARKS
I	<b>SHORT ANSWER</b>  a. Multiple choice : 10  b. Abbreviation : 20  c. Define/explain : 10	<b>40</b>
II	<b>ESSAY</b>	<b>60</b>

**TOTAL MARKS**

**100**

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## SECTION I: SHORT ANSWER

### Part A: Multiple choice

*10 x 1.0 = 10 marks*

1. Microwave radiation is more useful in case of
  - a. Clouds
  - b. Dust
  - c. Haze
  - d. All
2. An increase in application of lime in the field would result in rapid?
  - a. Increase in reflectance
  - b. Decrease in reflectance
  - c. No effect in reflectance
  - d. None
3. GIS function in survey is to?
  - a. Data base
  - b. Mapping
  - c. Both
  - d. None
4. Satellite image showing white colour indicates the area under?
  - a. Forest
  - b. Ice cap
  - c. Both (a) & (b)
  - d. None
5. Remote sensing is acquiring knowledge from a distant place by what actual touch with object?
  - a. With
  - b. Without
  - c. Both
  - d. None of the above
6. Essentially remote sensing has how many components?
  - a. Signal
  - b. Sensor
  - c. Energy source
  - d. All
7. Which one is not a remote sensing platform?
  - a. Space shuttle
  - b. Satellite
  - c. Sun
  - d. None of the above
8. To verify correctness of remote sensing data by field studies is known as?
  - a. False colour composite
  - b. Ground truth
  - c. Grid
  - d. Pixel vlaue
9. Which of the following resolution best describe "the data acquisition was done on 4 times in a year?"
  - a. Spatial
  - b. Temporal
  - c. Radiometric
  - d. Spectral
10. The part of the drawn map explaining the meaning of symbols used to code the depicted geographical elements is known as?
  - a. Legend
  - b. Geo-referencing
  - c. Points
  - d. None

**Part B: Explain the given abbreviations**

*10 x 2.0 = 20 marks*

1. AVIRIS
2. EMS
3. ERTS
4. ETM+
5. FLIR
6. GPS
7. LIDAR
8. NIR
9. NASA
10. TM

**Part C: Define or explain**

**10 marks**

1. Define remote sensing. *2 marks*
2. What do you understand with geostationary orbit (GEO)? Explain *2 marks*
3. List down the type of remote sensing based on electromagnetic spectrum. *3 marks*
4. What are the advantages of microwave remote sensing? *3 marks*

## SECTION II: ESSAY

### Attempt all questions

**15 x 4.0 = 60 marks**

1. Analyse the active and passive remote sensing with suitable diagramme. Provide the application of remote sensing in various fields of fisheries science (any five). Discuss the advantages and disadvantages of the remote sensing system.

[5+5+5 = 15 marks]

2. Demonstrate the process components of remote sensing with appropriate diagramme. Briefly explain the optical, acoustic & near acoustic remote sensing with appropriate diagram (if any).

[7+4+4 = 15 marks]

3. Provide a neatly labelled sketch of Geographic Information System Components and discuss any two of them. Analyse the difference between the raster & vector data. List down the GIS tasks which could be completed using GIS technologies.

[4+2+2 + 4 + 3 = 15 marks]

4. Provide the list of the types of remote sensing resolutions and explain any two with appropriate diagram (if any). Apply your knowledge and explain the application of remote sensing in oceanography, meteorology, disaster warning and assessment.

[4+2+2 + 2+2+3 = 15 marks]

The end