



**FIJI NATIONAL UNIVERSITY**  
**College of Agriculture, Fisheries & Forestry**  
**School of Agriculture**  
**Department of Soil Science & Agril Engineering**  
**FINAL EXAMINATION: 2017**

B.Sc Agriculture III<sup>rd</sup> year: Trimester III<sup>rd</sup>

REMOTE SENSING AND ITS APPLICATION IN AGRICULTURE: AGR 703

TOTAL MARKS: 100

TIME ALLOWED: 3:10 HOURS

**INSTRUCTIONS:**

This paper consists of five (5) 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	OBJECTIVE	MULTIPLE CHOICE	15
II		TRUE OR FALSE	15
III		FILL IN BLANK	15
IV		ABBREVIATIONS	15
V	SUBJECTIVE	LONG ANSWER	40
<b>TOTAL MARKS</b>			<b>100</b>

**PART I: WRITE THE LETTER OF YOUR CHOICE**10 x 1.5 = Total 15 marks

1. If spatial resolution is smaller, what will be the resolving power of the sensor?
  - a. Greater
  - b. Smaller
  - c. Same
  - d. None
2. The most common raster data format (s) is / are?
  - a. TIFF
  - b. GIF
  - c. JPEG
  - d. All of the above
3. Which of the following spectral rays is used for vegetation properties?
  - a. Visible rays
  - b. Ultraviolet
  - c. Near Infrared
  - d. None of the above
4. What could be the reflectance % if we apply white colour on roof top?
  - a. Increased
  - b. Decreased
  - c. No effect
  - d. First Increases than decreases
5. The smallest discrete element which make up a raster image are referred as?
  - a. Pixel
  - b. Digital number
  - c. Grid
  - d. Point
6. 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
7. 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
8. The minimum distance between two objects that can be distinguished by?
  - a. Spectral resolution
  - b. Temporal resolution
  - c. Radiometric resolution
  - d. Spatial resolution

- 9. Which one of given best describe sensitivity of the sensor?
  - a. Radiometric resolution
  - b. Temporal resolution
  - c. Spectral resolution
  - d. None of the above r
- 10. Which of the following band is used in near infrared radiation?
  - a. 0.4-0.7nm
  - b. 0.7-1.3nm
  - c. 1.3-3.0 nm
  - d. None of the above

**PART II : FILL THE BLANK SPACE WITH PROPER WORD**

10 x 1.5 = Total 15 marks

- 1. At ..... wavelength visible rays fall.
- 2. Change in intensity level can be detected by the sensing system in ..... resolution.
- 3. The Bavarian Pigeon Corps were used in year.....
- 4. SPOT (System Pour Observation Terre) was developed by the ..... National Centre.
- 5. NASA's Landsat satellite programme was started in .....
- 6. What is the full form of GIS.....
- 7. List the passive remote sensing systems  
.....
- 8. Elaborate LEO .....
- 9. First photos from an airplane was taken in .....
- 10. The software developed by ESRI we use in computer lab is .....

**PART III : STATE 'TRUE' OR 'FALSE'**10 x 1.5 = Total 15 marks

1. Intensity is sum of intensity of all visible wavelengths in case of black and white images.
2. Local problems can be visualized using GIS technology like discovering the best way to dispose of urban waste.
3. IRS satellite programme was started by China?
4. Passive remote sensing uses an artificial source for energy.
5. Satellite images are collected in raster format, which is a matrix of thousands of individual picture elements called pixels
6. Forward looking infrared (FLIR) is a passive scanner which converts incident thermal (heat) rays into real-time video signals.
7. Scanners are active sensors that capture the reflected or emitted energy intensity from observed objects.
8. LIDAR offers some advantages over aerial photography in creating topographic maps.
9. Remote sensors can be operated in all seasons, at night, and in bad weather.
10. The principal advantages of remote sensing are the speed at which data can be acquired from large areas of the earth's surface.

**PART IV : WRITE THE FULL FORM OF GIVEN ABBREVIATIONS**10 x 1.5 = Total 15 marks

- |          |          |
|----------|----------|
| 1. LIDAR | 6. GOES  |
| 2. SAR   | 7. FLIR  |
| 3. GPS   | 8. NOAA  |
| 4. EMS   | 9. IRS   |
| 5. RADAR | 10. NASA |

**PART V: WRITE THE ANSWER OF GIVEN QUESTIONS IN DETAIL****8 x 5 = Total 40 marks**

1. What is a Geographic Information System? What are the components of GIS? How GIS application can be useful in your specialization?
2. Discuss the application of Remote Sensing in
  - I. Meteorology
  - II. Agriculture
  - III. Botany- forecasting crop yields.
  - IV. Disaster warning and assessment
  - V. Planning applications
3. What do you understand by a raster and vector data? List down the name of GIS entities used for representations of real world features.
4. Briefly discuss the types of resolutions and explain any two with appropriate diagram if any? A panchromatic aerial photo is to be scanned at a resolution of 300 points per inch. The photo encompasses a 12-in square area. What disk space will be required to store the photo?
5. Draw a neatly labeled sketch of Schematic of the components of an airborne LIDAR system.

The End

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