



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2015/2016**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN EARTH SCIENCE  
WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**NGA 205: REMOTE SENSING**

Date: 14<sup>th</sup> January, 2016

Time: 11.00 - 1.00 pm

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**INSTRUCTIONS:**

- Answer questions ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.



### NGA 205: REMOTE SENSING

1. (a) Examine FIVE atmospheric windows used for remote sensing the earth surface.  
10 marks  
(b) Discuss the role of remote sensing in natural resources management.  
12 marks  
(c) Explain how the salient features of the synthetic radar aperture (SAR) make it unique.  
8 marks
2. (a) Examine FOUR active sensors used in remote sensing.  
8 marks  
(b) Discuss THREE types of satellite orbits used for earth observation.  
12 marks
3. (a) Explain the interaction of the electromagnetic radiation with surface targets.  
12 marks  
(b) Examine FOUR characteristics of image data.  
8 marks
4. (a) An air photo survey is to be carried out using a metric aerial camera with a focal length of 152mm, with the aircraft being flown at 3800m above the ground. Determine the number of photos required to cover an area of 50km by 25km if the size of one photo is 23cm by 23cm.  
8 marks  
(b) Discuss THREE applications of thermal infrared imagery.  
12 marks
5. (a) Explain the importance of microwave polarization in the study of earth surface features.  
8 marks  
(b) Write concise notes on aerial photography.  
12 marks
6. (a) Examine the advantages and disadvantages of hyper-spectral remote sensing.  
8 marks  
(b) Discuss one remote sensing method suitable for oil exploration.  
12 marks