



University of South Australia

If you are required to use a calculator, please note the make and model here:

Calculator Make: _____

Calculator Model: _____

2006 Mid Year Examination – Sample Questions

Student ID Number

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| Student ID Number | | | | | | | | | | | | | | | | | | | |
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| Family Name | |
| Given Names | |

Division of Information Technology, Engineering and the Environment

School of natural and Built Environments

Course Name Earth Observation Science 3

Subject Area GEOE Catalogue Number 3011

Examination Day Monday Examination Date 19th June, 2006

Examination Time 9.00 am Length of Exam 2 hrs plus 10 mins reading

| | |
|---------------------------|--------------------------|
| Examination Venue: | CE P 3 - 18 and P 3 - 19 |
|---------------------------|--------------------------|

Instructions to Candidates

This is mainly a multi-choice test. Please select the most appropriate answer.

In multi-choice questions only select ONE answer per question, by circling your choice

Only attempt the sections, shaded grey in the table below, corresponding to your assessment choice.

Attempt ALL questions in the sections 1 and 2. Attempt 5 questions in section 3.

Place your answers on the question sheet.

| Assessment Choice | SECTION 1 Hyperspectral RS | SECTION 2 Radar RS | SECTION 3 Close Range Photogrammetry |
|-------------------|-------------------------------|-----------------------|--|
| B | | | |
| C | | | |

Conduct in examinations

- Students are responsible for finding out their examination times and locations and for travelling to the venue. Examination times and locations are published on the University web site and advertised on the student portal. It is recommended that students arrive at least 15 minutes prior to the advertised start time.
- Students who arrive up to 30 minutes after the published start time will be permitted to enter the examination room but will not be allowed any additional time to complete the examination.
- Students who arrive more than 30 minutes after the published start time will not be permitted to enter the examination room and will receive a zero mark for that assessment.
- All students must bring with them, and display on their desk:
 - their student identification card: or
 - an alternative form of photographic identification such as a passport or driver's license. If a student does not provide acceptable photographic identification the invigilator will compare the student's likeness with University records in order to verify the student's identity;
- Where applicable, students must also display on their desk:
 - an approved disability access plan; and/or
 - an ENTEXT Card (for students who are entitled to extra time but have not been issued with an indicator on their student identification card)
- Unless otherwise specified in the course information booklet or as an agreed provision under Section 3: Moderation and Variation, a student must not take into the examination room any item with the potential to provide them or another student with an advantage, including but not limited to:
 - text books or any other book including dictionaries
 - calculators
 - mobile telephones, personal digital assistants, messaging devices or any other electronic device
 - notes, or other written documents
 - devices or personal items
 - examination answer booklets, attendance slips or scrap paper
- Any items specified as being allowed in the course information booklet must not be enhanced or tampered with in any way that provides an additional advantage to the student or any other student.

Procedures during the examination

- Every student must complete the attendance slip provided.
- The examination starting time may include a designated reading time for students. During this reading time, students are not permitted to write in the examination booklets but may complete attendance slips, fill in details required on the front cover of examination booklets, and make notes on loose-leaf paper provided. An invigilator will announce when the reading time has elapsed, after which students may write in the examination booklet.
- No student will commence writing answers until authorised by an invigilator. All students must stop writing when instructed by an invigilator. At the end of the examination all students must remain seated until all examination booklets have been collected.
- During an examination students are not permitted to speak to or communicate with any other student, or give or receive any form of assistance, academic or otherwise.

Procedures for leaving the examination room

- Students are not permitted to leave the examination room in the first 30 minutes after the published starting time or during the last 10 minutes of any examination.
- After the first 30 minutes of the examination has lapsed, a student can request to leave the examination room for a short break. When approval is given by an invigilator, the student will be supervised during the period of absence.
- Students wishing to permanently leave the examination room must hand all examination booklets to the invigilator who will endorse the booklets as correctly identifying the student. Students cannot remove any examination answer booklets, scrap paper or attendance slips from the examination room.

Breaches of examination procedures

- A breach of the examination procedures may constitute academic misconduct. Procedures are deemed to be breached even if it cannot be demonstrated that the student gained an advantage from the breach. For example, if a student takes a mobile telephone or device into the examination room but does not switch it on or remove it from their pocket, it may still constitute academic misconduct although the intent is recognised in determining an appropriate outcome.
- Breaches of the examination procedures will be recorded under Section 9: Academic Integrity of this manual whether they constitute academic misconduct or not.

Procedures for breaches that cause disruption to an examination

- Any student disrupting the examination can be instantly dismissed from the examination room at the discretion of the chief invigilator. Where dismissal is the appropriate course of action, the chief invigilator will document the incident and provide a report to the Head of School or Director: Regional Engagement or nominee.
- The Head of School or Director: Regional Engagement or nominee will investigate the incident as either:
 - academic misconduct by following the procedures for formal inquiry set out in Section 9: Academic Integrity, or
 - misconduct under Statute 7: Student Misconduct.
- Where dismissal is not deemed appropriate by the chief invigilator, the student will be permitted to remain in the examination, and clause 6.6 will apply.

Procedures for breaches that do not cause disruption to an examination

- If a breach is detected that does not cause disruption to the examination, or is assessed by the chief invigilator as not warranting dismissal from the examination room, the invigilator will tell the student that the breach has been detected and will be reported.
- The invigilator will document the incident and will provide a copy of this report to the Academic Integrity Officer at the relevant school within 5 working days of the incident.

- If the Academic Integrity Officer considers that the breach constitutes academic misconduct, they will investigate the incident by following the procedures for managing alleged academic misconduct set out in Section 9: Academic Integrity.
- If the Academic Integrity Officer considers that the breach does not constitute academic misconduct, they will provide academic counselling to the student.

Earth Observation Science 3
GEOE 3011

**End of Semester Exam
June 2006**

TIME: 2 HOURS plus 10 minutes reading

SECTION 1: HYPERSPECTRAL REMOTE SENSING (attempt all 12 questions)

Q2 In SAM both the angle between, and the magnitude of, two image vectors in N space are utilised to separate two features:

True or **False**

Q3 Classification of objects from hyperspectral imagery using reference spectra from standard libraries requires that:

- a) Imagery be geo-referenced prior to classification
- b) Imagery be de-speckled prior to analysis
- c) Imagery be radiometrically calibrated prior to classification
- d) Imagery be normalised using PCA prior to analysis
- e) All of the above

SECTION 2: MICROWAVE RADAR REMOTE SENSING (attempt all 12 questions)

Q14 Which of the following object properties has the most impact on radar backscatter:

- (a) Soil dielectric
- (b) Leaf Area Index
- (c) Object molecular structure
- (d) Object geometry

Q17 In SAR relief distortion is towards the antenna

True or **False**

SECTION 3: CLOSE RANGE PHOTOGRAMMETRY (attempt 5 questions)

Q26 List the advantages and disadvantages of normal versus convergent close range photogrammetry

- Q30** Briefly explain how in the formation of 3D views of objects:
- a) Surfaces are rendered
 - b) Textures are applied to surfaces