School of Natural and Built Environments,
University of South Australia

Earth Observation Science 2

GEOE 2013

End of Semester Test
Sample Questions – November 2004

TIME: 2 HOURS plus 10 minutes reading
This is a multi-choice test.
Please select the most appropriate answer of the two, four or five answers.
Only select ONE answer per question.
Attempt ALL 30 questions

Name: …….

Student ID: ……..

IMAGE ENHANCEMENT (8 questions)

Q1 Principal Component Analysis achieves:

a) A better arrangement of image data for classification purposes
b) A rearrangement of image data so that the most significant information is in the higher bands and the least significant in the lower bands
c) A reduction of image noise
d) A statistical summary of image data
e) Detection of the principal object information classes in an image

Q2 Sobel edge detection utilizes an approximation of the second derivative of the image surface to detect edges

True or **False**

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IMAGE RADIOMETRIC CALIBRATION (4 questions)

Q9 MODTRAN, LOWTRAN and ACORN are all examples of:

(a) Image warping routines.
(b) Adjustment routines used in creating spectral radiance measurements at the sensor

(c) Atmospheric models to transform spectral radiance to at object spectral reflectance
(d) Geometric transformations used prior to applying radiometric calibration.

Q10 Empirical Line Calibration can be used to directly transform image digital numbers to at ground reflectance.

True or **False**

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IMAGE CLASSIFICATION (11 questions)

Q13 ISOData unsupervised classification allocates pixels to classes based on:

(a) The smallest Euclidian distance to class means
(b) A random allocation of spectral values.
(c) The highest probability of class membership
(d) The lowest isometric distance to classes
(e) The most logical algorithm for spectral allocation

Q14 *Apriori* probability can be used to weight a decision rule such as Maximum Likelihood.

True or **False**

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GENERAL QUESTIONS (7 questions)

Q24 Image classification via spectral methods is improved when the spatial resolution of the image is increased

True or **False**

Q25 Fuzzy image classification uses:

(a) Deterministic rules to apply class labels to pixels
(b) Image texture as an additional attribute to aid classification
(c) Majority filtering of class labels in neighbourhoods surrounding a pixel
(d) *Posterior* probability of class membership together with neighbourhood decisions to allocate class membership

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