
UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2003/2004

February/March 2004

ZGT 374E/3 - Remote Sensing
[Penderiaan Jauh]

Duration: 3 hours
[Masa: 3 jam]

Please check that the examination paper consists of **THREE** pages of printed material before you begin the examination.

*[Sila pastikan bahawa kertas peperiksaan ini mengandungi **TIGA** muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]*

Instruction: Answer all **FOUR (4)** questions. Students are allowed to answer all questions in Bahasa Malaysia or in English.

Arahan: *Jawab kesemua **EMPAT** soalan. Pelajar dibenarkan menjawab semua soalan sama ada dalam Bahasa Malaysia atau Bahasa Inggeris.]*

1. (a) Describe the cause and effects of Rayleigh scatter and non-selective scatter.
 [(a) *Perihalkan punca dan kesan bagi penyerakan Rayleigh dan penyerakan tak memilih.*]
 (25/100)
- (b) Write a short note describing how spatial resolution, spectral resolution and radiometric resolution are interrelated.
 [(b) *Tulis nota ringkas tentang kaitan diantara peleraian-peleraian ruang, spektrum dan radiometri.*]
 (25/100)
- (c) Identify and describe the advantages of multispectral scanner data over photography.
 [(c) *Huraikan tentang kelebihan-kelebihan data pengimbas multispektrum mengatasi fotografi.*]
 (25/100)
- (d) Describe the operating principles of across-track multispectral scanner.
 [(d) *Perihalkan prinsip operasi pengimbas multispektrum merentas trak.*]
 (25/100)
2. (a) Write a short note describing how vertical aerial photographs are taken.
 [(a) *Tuliskan nota bagaimana fotograf udara tegak diambil.*]
 (25/100)
- (b) A vertical aerial photograph shows two features to be separated by 4.5 in. A map of 1:24,000 shows the same two features to be separated by 9.3 in. Calculate the scale of the photograph.
 [(b) *Fotograf udara tegak menunjukkan dua corak terpisah dengan jarak 4.5 inci. Peta yang berskala 1:24,000 menunjukkan corak yang sama tersebut terpisah pada 9.3 inci. Hitung skala fotograf tersebut.*]
 (25/100)
- (c) Describe the interaction of thermal radiation with terrain elements.
 [(c) *Perihalkan saling tindakan sinaran terma dengan unsur-unsur teren.*]
 (25/100)
- (d) Explain the importance of ground control for remote sensing.
 [(d) *Jelaskan kegunaan kawalan bumi untuk penderiaan jauh.*]
 (25/100)

3. (a) Describe the difference between supervised and unsupervised classifications.
[[a) *Perihalkan perbezaan diantara pengelasan terselia dan tak-terselia.*]
(25/100)
- (b) Write a short note on hyperspectral sensing.
[[b) *Tuliskan nota tentang penderiaan hiperspektrum.*]
(25/100)
- (c) Describe the earth surface feature characteristics influencing radar returns.
[[c) *Perihalkan ciri-ciri corak permukaan bumi yang mempengaruhi kembalian radar.*]
(25/100)
- (d) Explain the processing steps for geometric correction of digital images.
[[d) *Jelaskan langkah-langkah pemprosesan untuk pembetulan geometri imej digit.*]
(25/100)
4. Explain the used of the Remote Sensing Method in the following field:
[[Jelaskan kegunaan Kaedah Penderiaan Jauh di dalam bidang berikut:]]
- (a) Meteorology
[[a) *Meteorologi*]
(40/100)
- (b) Geology
[[b) *Geologi*]
(30/100)
- (c) Oceanography
[[c) *Oseanografi*]
(30/100)