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# UNIVERSITI SAINS MALAYSIA

Second Semester Examination  
Academic Session 2008/2009

April/May 2009

**EBS 328/3 – Prospecting Geochemistry**  
**[Geokimia Carigali]**

Duration : 3 hours  
[Masa : 3 jam]

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Please ensure that this examination paper contains **FOUR** printed pages before you begin the examination.

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

This paper contains **SEVEN** questions.

*[Kertas soalan ini mengandungi **TUJUH** soalan.]*

**Instruction:** Answer **QUESTION 1** and **FOUR** other questions. If candidate answers more than five questions only the first five questions answered in the answer script would be examined.

**[Arahan:** Jawab **SOALAN 1** dan **EMPAT** soalan lain. Jika calon menjawab lebih daripada lima soalan hanya lima soalan pertama mengikut susunan dalam skrip jawapan akan diberi markah.]

Answer to any question must start on a new page.

*[Mulakan jawapan anda untuk setiap soalan pada muka surat yang baru.]*

You may answer a question either in Bahasa Malaysia or in English.

*[Anda dibenarkan menjawab soalan sama ada dalam Bahasa Malaysia atau Bahasa Inggeris.]*

1. You are given the task to design and implement a geochemical exploration program looking for gold in Kuala Lipis Central Region Area. By using a flow sheet, indicate the various stages of the exploration program and decision points that are required to be made. Annotate on the flow chart the various information that you require.

*Anda ditugaskan merangka dan melaksanakan program carigali geokimia mencari emas di kawasan tengah Kuala Lipis. Dengan menggunakan carta alir, tunjukkan tahap-tahap yang terlibat di dalam kerangka carigali dan titik keputusan yang perlu dibuat. Buat catatan tambahan anda di atas lakaran kerangka di mana perlu.*

(20 marks/markah)

2. Define dispersion. Discuss how dispersion occurs or developed in the primary and secondary environment. Discuss how dispersion can be used in search for the presence of mineral deposits.

*Beri takrif serakan. Bincangkan bagaimana serakan berlaku atau terbina di dalam persekitaran primer dan sekunder.*

(20 marks/markah)

3. Describe and discuss the field conditions that warrant geochemical exploration to be used. Sketch them where necessary.

*Hurai dan bincangkan keadaan lapangan yang membolehkan carigali geokimia digunakan. Buat lakaran di mana perlu.*

(20 marks/markah)

4. Compare and contrast detailed survey from reconnaissance survey.

*Buat perbandingan persamaan dan perbezaan di antara tinjauan awal dengan tinjauan terperinci.*

(20 marks/markah)

5. Visualization techniques are very important in displaying and highlighting geochemical data. Discuss the various techniques that are commonly employed in the geochemical exploration work.

*Teknik tampak adalah sangat penting di dalam memapar dan menonjolkan data geokimia. Huraikan teknik yang lazim digunakan di dalam kerja-kerja carigali geokimia.*

(20 marks/markah)

6. Litho geochemistry, pedo geochemistry and stream sediment geochemistry are usually employed in orientation survey, reconnaissance and detailed survey. Discuss or define what are meant by litho geochemistry, pedo geochemistry and stream sediment geochemistry. Discuss their merits and demerits in using them in the three survey techniques.

*Litogeokimia, pedogeokimia, dan geokimia sedimen sungai sering digunakan di dalam tinjauan awal, tinjauan orientasi dan tinjauan terperinci. Bincang atau beri takrif apa yang dimaksudkan dengan Litogeokimia, pedogeokimia, dan geokimia sedimen sungai. Hurai dan bincangkan kekuatan dan kekurangan kaedah tersebut jika digunakan di dalam ketiga-tiga jenis tinjauan.*

(20 marks/markah)

7. Define or describe the following terms:

*Beri takrif atau perihalkan istilah berikut:*

- [a] Path finder elements / *Unsur perisik*
- [b] Path indicator elements / *Unsur penunjuk*
- [c] Trace elements / *Unsur surih*
- [d] Ion mobility / *Kelincahan ion*
- [e] Mode of occurrence of trace elements / *Mod kejadian unsur surih*
- [f] Anomalies / *Anomali*
- [g] Background / *Nilai latar*
- [h] Noise / *Hingar*
- [i] Threshold values / *Nilai ambang*
- [j] Leakage anomalies / *Anomali tiris*

(20 marks/markah)