UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2010/2011

April/May 2011

EBS 328/3 - Prospecting Geochemistry
[Geokimia Carigali]

Duration : 3 hours
[Masa : 3 jam]

Please ensure that this examination paper contains SIX printed pages before you begin the examination.
[Sila pastikan bahawa kertas peperiksaan ini mengandungi ENAM muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]

This paper consists of SEVEN questions.
[Kertas soalan ini mengandungi TUJUH soalan.]

Instruction: Answer **FIVE** questions. Answer **QUESTION ONE** and **FOUR** other questions. If a candidate answers more than five questions only the first five questions answered in the answer script would be examined.
*[**Arahan**: Jawab **LIMA** soalan. Jawab **SOALAN SATU** dan **EMPAT** soalan lain. Jika calon menjawab lebih daripada lima soalan hanya lima soalan pertama mengikut susunan dalam skrip jawapan akan diberi markah.]*

The answers to all questions must start on a new page.
[Mulakan jawapan anda untuk semua 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.]

In the event of any discrepancies, the English version shall be used.
[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah diguna pakai.]

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1. Following is geochemical data obtained from a company:

Berikut adalah data carigali yang diperoleh dari sebuah syarikat:

Sample No	Zn (ppm)	Cu (ppm)
1	24	7
2	25	9
3	42	12
4	50	15
5	52	18
6	29	10
7	26	10
8	23	7
9	89	32
10	72	11
11	31	11
12	115	37
13	535	350
14	48	17
15	1010	590
16	560	490
17	48	8
18	44	11
19	36	7
20	33	20
21	45	27
22	118	33
23	274	63
24	81	22
25	80	23

(a) Calculate the mean value for the two elements Zn and Cu.

Kira nilai min bagi unsur Zn dan Cu.

(b) Obtain the values of anomaly, background and threshold.

Dapatkan nilai anomali, nilai latar dan nilai ambang.

(c) Obtain the contrast for the two elements.

Dapatkan nilai kontras kedua-dua unsur tersebut.

(d) Plot the values of Zn against Cu.

Plot nilai-nilai unsur Zn lawan Cu.

(e) Obtain the correlation value from the plot.

Dapatkan nilai korelasi di antara unsur Zn dan Cu (daripada plot d).

(f) Construct bar histogram for Zn and Cu.

Bina histogram bar bagi Zn dan Cu.

(g) Construct cumulative frequency for Zn and Cu.

Bina frekuensi bertokok bagi Zn dan Cu.

(h) Obtain the mode and the median.

Dapatkan nilai mod dan median.

(i) Give your comments as to the use of mean, mode and median in the geochemical exploration program.

Beri pandangan anda tentang kegunaan nilai min, mod dan median dalam carigali geokimia.

(j) Give your opinions as regard to the possibility of finding mineralization in the area and state your reasons.

Beri komen anda tentang kemungkinan wujudnya pemineralan di kawasan lokasi dan sertakan buktinya sekali.

(40 marks/*markah*)

2. With the aid of a flow chart, describe the sequential flow of the various steps of a mineral exploration program. Include also the various decision stages that need to be undertaken by the management.

Dengan menggunakan carta alir, perihalkan langkah-langkah yang perlu dibuat semasa merangka program carigali. Masukkan juga tahap keputusan yang perlu diambil oleh pihak pengurusan program carigali tersebut.

(15 marks/*markah*)

3. Write short notes of the following items.

Tulis nota ringkas mengenai perkara berikut:

a. Pathfinder elements / *Unsur perisik*
b. Path indicator elements / *Unsur penunjuk*
c. Contrast / *Kontras*
d. Anomaly / *Anomali*
e. False anomaly / *Anomali palsu*
f. Mobility / *Kelincahan*
g. Background values / *Nilai latar*
h. Regional background values / *Nilai latar kawasan*
i. Leakage anomalies / *Anomali tiris*
j. Mineral deposit / *Mendapan mineral*

(15 marks/*markah*)

4. Dispersion pattern formed as a result of the movements of elements. Define dispersion. Describe how dispersion formed in both primary and secondary environments. Use diagram to illustrate your answers.

Pola serakan terjadi hasil daripada pergerakan unsur. Beri takrif serakan. Perihalkan bagaimana serakan terbentuk di dalam persekitaran primer dan sekunder. Gunakan gambarajah untuk mengilustrasikan jawapan anda.

(15 marks/*markah*)

5. Distinguish the three types of survey. State clearly their objectives. Describe what information you want to collect for each type of the survey and state the reasons.

Bezajelaskan ketiga-tiga jenis tinjauan. Nyatakan tujuan tinjauan tersebut. Perihalkan maklumat apakah yang anda mahu kumpulkan bagi setiap tinjauan tersebut dan nyatakan sebab-sebabnya.

(15 marks/*markah*)

6. There are many ways to illustrate or display your geochemical exploration data according to their importance. List them and describe their importance to mineral exploration program.

Terdapat banyak cara mengilustrasikan atau memaparkan data carigali geokimia menurut kepentingan masing-masing. Senaraikan cara paparan tersebut dan perihalkan kepentingannya di dalam program carigali.

(15 marks/*markah*)

7. With the aids of diagrams, describe and annotate on the diagrams the field conditions that warrant the use of geochemical exploration techniques.

Dengan menggunakan rajah, perihalkan keadaan lapangan yang menuntut kegunaan teknik carigali geokimia. Buat catatan anda di dalam rajah yang anda lakarkan.

(15 marks/*markah*)

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