UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 2008/2009

November 2008

ZGE 375/2 – Engineering and Environmental Geophysics
[Geofizik Kejuruteraan dan Persekitaran]

Duration : 2 hours
[Masa : 2 jam]

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.]*

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

*[**Arahan**: Jawab **EMPAT (4)** soalan. Pelajar dibenarkan menjawab semua soalan sama ada dalam Bahasa Malaysia atau Bahasa Inggeris.]*

.../2-

1. (a) Discuss the reasons why geophysicists need to study engineering field.
[Bincangkan kenapa ahli geofizik perlu mempelajari bidang kejuruteraan.]

(50/100)

(b) Boulders always create problems in engineering and environmental work. Discuss.
[Batu bundar selalu menimbulkan masalah dalam kerja kerja kejuruteraan dan persekitaran. Bincangkan.]

(50/100)

2. (a) Clay minerals often present near the Earth surface. Discuss the advantages and disadvantages of clay minerals in engineering and geophysics.
[Mineral lampung. Bincangkan kebaikan dan keburukan mineral lampung dalam kejuruteraan dan geofizik.]

(50/100)

(b) Discuss:
[Bincangkan:]

i. Standard Penetration Test.
Ujian Penusukan Piawai.

ii. Cone Penetration Test.
Ujian Penusukan Kon

(50/100)

.../3-

3. Aggregate (natural/ crushed) is originated from igneous, metamorphic or sedimentary rock. The performance of the aggregate depend on test type.
["Aggregate" (semulajadi/ remukan) adalah berasal dari batuan igneous, metamorfik atau sediment. Perkembangan "Aggregate" ini bergantung kepada dua jenis ujian.]

(a) Name the two types of test and briefly describe them.
[Namakan dua jenis ujian ini dan jelaskan secara ringkas.]

(b) Name the three type of alkali reaction and briefly describe them.
[Namakan tiga jenis tindakbalas alkali dan jelaskan secara ringkas.]

(c) List factors that influence the rate of dedolomitization
[Senaraikan faktok-faktor yang mempengaruhi kadar "dedolomitization".]

(100/100)

4. (a) Plot graph from seismic data below. Interpret it in terms of geology and engineering applications.
[Platkan graf daripada data seismik dibawah. Tafsirkan dalam terma geologi dan kejuruteraan.]

Distance From shot *(Jarak dari titik tembak)* (m)	Forward traverse *(Tembakan hadapan)* (ms)	Reversed traverse *(Tembakan belakang)* (ms)
5	3.6	38.8
10	7.1	37.9
15	10.7	36.9
20	14.3	36.0
25	17.9	35.1
30	21.4	34.1
35	23.0	33.2
40	24.0	32.3
45	24.9	31.4
50	25.8	30.4
55	26.7	29.5
60	27.7	28.6
65	28.6	27.7
70	29.5	26.7
75	30.4	25.8
80	31.4	30.4
85	37.8	28.6
90	38.7	25.0
95	39.7	21.4
100	40.6	17.9
105	41.5	14.3
110	42.4	10.7
115	43.4	7.1
120	44.3	3.6

[100/100]

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