UNIVERSITI SAINS MALAYSIA

First Semester Examination
Academic Session 2008/2009

November 2008

ZGT 268/3 – Exploration Geophysics I
[Geofizik Pencarigalian I]

Duration: 3 hours
[Masa : 3 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** questions only. Students are allowed to answer all questions in Bahasa Malaysia or in English.

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

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1. (a) Define in detail the statements below;
[Takrifkan dengan lengkap kenyataan berikut;]

(i) Strain *[Terikan]*

(ii) Normal Strain *(Terikan normal)*

(iii) Shearing strain *(Terikan mericih)*

(50/100)

(b) Describe in detail the terminologies with the aid of a diagram.
[Jelaskan dengan lengkap sebutan berikut berpandukan bantuan gambarajah.]

(i) Wave front *[Muka gelombang]*

(ii) Ray path *(Laluan sinar)*

(iii) S wave *[Gelombang S]*

(50/100)

2. (a) Describe how seismic waves react when meet an interface by using Snell's Law.
[Jelaskan dengan menggunakan Hukum Snell's bagaimana gelombang seismos bertindak bila bertemu subpermukaan]

(40/100)

(b) The energy of seismic wave propagation in a medium is depended on energy density and intensity. Discuss the two factors.
[Perambatan tenaga gelombang seismos di dalam bahantara bergantung kepada ketumpatan tenaga dan keamatan. Bincangkan kedua dua faktor ini]

(60/100)

3. (a) Seismic detector is known as geophone (land) and hydrophone (marine). With the aid of a diagram discuss how ;
[Pengesan gelombang seismic biasanya dipanggil geofon (daratan) dan hidrofon (air). Berbantukan gambarajah bincangkan;]

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(i) those detectors work
[bagaimana kedua dua pengesan berfungsi]

(ii) to choose suitable detectors.
[bagaimana memilih pengesan yang sesuai.]

(100/100)

4. (a) In seismic refraction survey, forward and reverse shot is very important. Below are the data for forward and reverse shot. Interpretate the data.
[Bagi tinjauan pembiasan seismos, tembakan hadapan dan belakang adalah penting. Berikut adalah data bagi tembakan hadapan dan belakang. Tafsirkan data ini.]

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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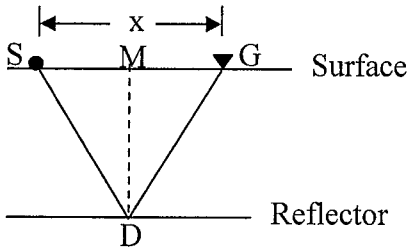
5. (a) For seismic reflection, travel time equation can be written as a function of offset. With the aid of the diagram below,
[Bagi tinjauan seismik pembalikan, persamaan masa perjalanan dapat dituliskan sebagai fungsi "offset". Berbantukan gambarajah di bawah]



(i) Write the travel time equation as a function of offset.
[Tuliskan persamaan masa perjalanan dengan fungsi "offset"]

(ii) Define NMO and CPD.
[Takrifkan NMO dan 'CPD']

(60/100)

(b) Complete the table below.
[Lengkapkan jadual dibawah]

		Δt_{nmo} (s)	
t(0) (s)	V_{nmo} (m/s)	x = 1000 m	x = 2000 m
0.25	2000		
0.5	2500		
1	3000		
2	3500		
4	4000		

(40/100)

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