

**SULIT**



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENGAJIAN POLITEKNIK  
KEMENTERIAN PENDIDIKAN MALAYSIA**

**JABATAN KEJURUTERAAN AWAM**

**PEPERIKSAAN AKHIR  
SESI JUN 2013**

**CC103 – ENGINEERING SURVEY 1**

**TARIKH : 23 OKTOBER 2013  
TEMPOH : 2 JAM (8.30 AM – 10.30 AM)**

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Kertas ini mengandungi **SEPULUH (10)** halaman bercetak.

Bahagian A: Objektif (10 soalan)

Bahagian B: Struktur (4 soalan)

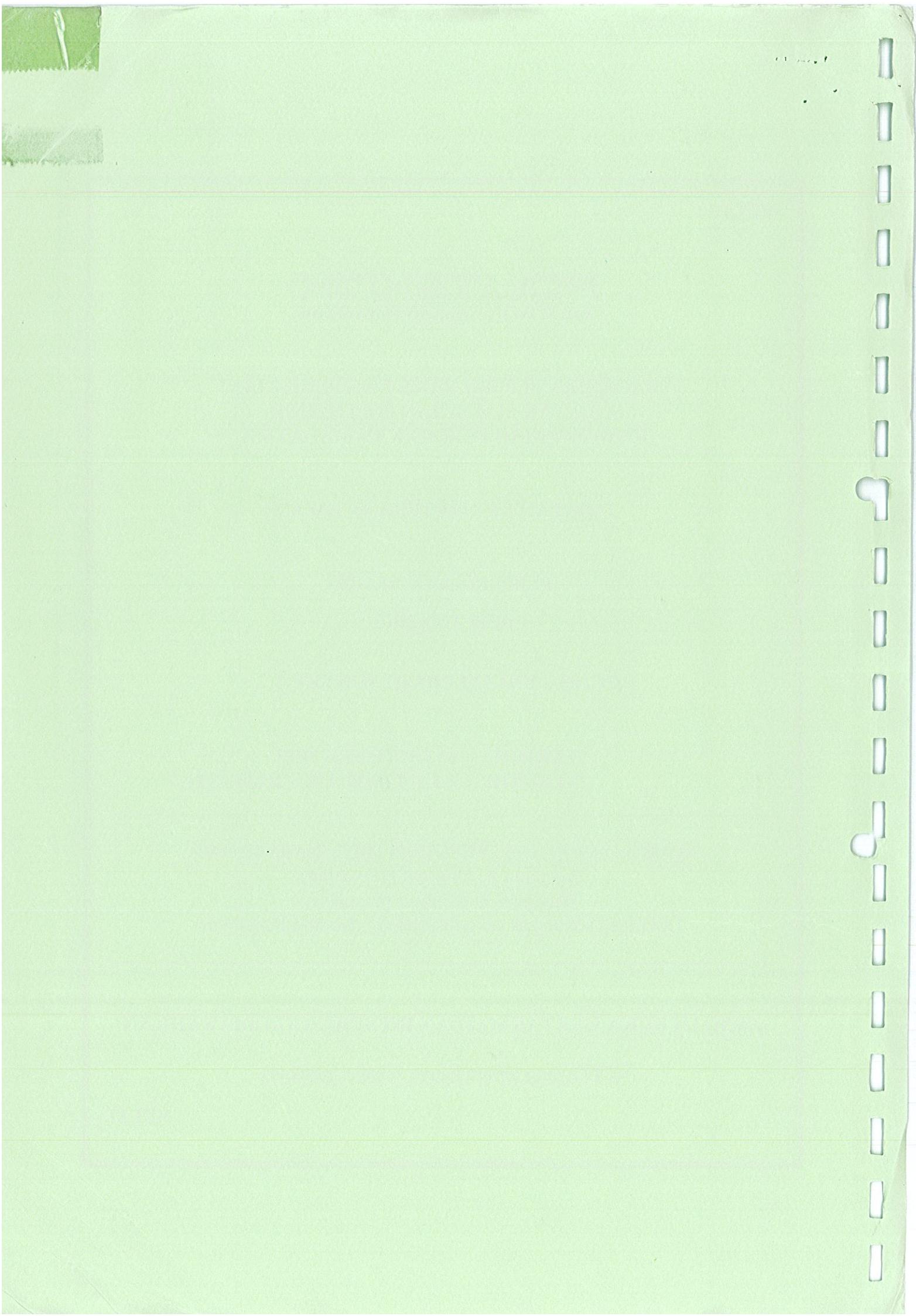
Dokumen sokongan yang disertakan : Borang Pengiraan

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**JANGAN BUKA KERTAS SOALANINI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

**SULIT**



**SECTION A : 40 MARKS**  
**BAHAGIAN A : 40 MARKAH**

**INSTRUCTION:**

This section consists of **TEN (10)** short questions. Answer **ALL** questions.

**ARAHAN :**

Bahagian ini mengandungi **SEPULUH (10)** soalan pendek. Jawab semua soalan.

CLO1  
C1

**QUESTION 1**  
**SOALAN 1**

State **TWO (2)** differences between Geodetic surveying and Plane surveying.

*Nyatakan DUA (2) perbezaan antara ukur Geodetik dan ukur Satah.*

[4 marks]  
[4 markah]

CLO1  
C2

**QUESTION 2**  
**SOALAN 2**

Refer to Figure A1, recognize the name of **BS**, **CP**, **FS** and **TBM** in engineering term.

*Merujuk kepada Rajah A1, lengkapkan singkatan BS, CP, FS dan TBM kepada istilah kejuruteraan.*

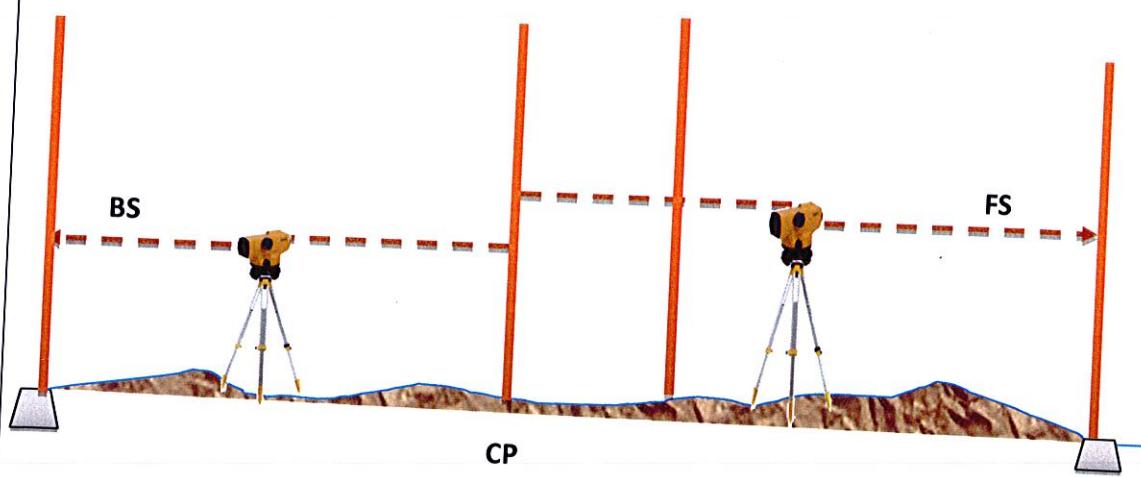


Figure A1/ Rajah A1

[4 marks]  
[4 markah]

CLO2  
C3**QUESTION 3**  
**SOALAN 3**

Based on the Figure A3, calculate the value of reduce level at point B.

Berdasarkan kepada Rajah A3, kira nilai aras laras pada titik B.

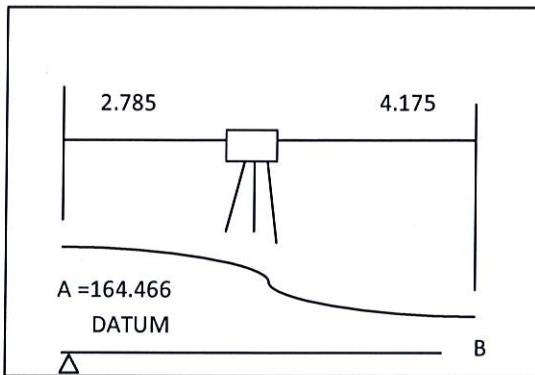


Figure A3/ Rajah A3

[4 marks]  
[4 markah]

CLO2  
C3**QUESTION 4**  
**SOALAN 4**

Calculate the arithmetical check from the given survey data in Table A4.

Kirakan semakan aritmetik dari data pengukuran dalam Jadual A4.

Station	Back Sight	Fore Sight	Rise	Fall
1	2.234			
2	1.120	1.321		
3	1.426	1.539		
4		2.632		

Table A4/ Jadual A4

[4 marks]  
[4 markah]

**SULIT**CLO1  
C2**QUESTION 5**  
**SOALAN 5**

There are two systems which commonly used to indicate the value of bearings in compass surveying. Differentiate between whole circle bearing system and quadrant bearing system.

*Terdapat dua sistem yang biasanya digunakan untuk menyatakan nilai bearing di dalam ukur kompas. Bezakan di antara sistem bearing bulatan penuh dan sistem bearing sukuan.*

[4 marks]  
[4 markah]

CLO1  
C1**QUESTION 6**  
**SOALAN 6**

Name **FOUR (4)** component parts of digital theodolite from A to D accordingly in Figure A6.

*Namakan **EMPAT (4)** komponen teodolit digital dari A ke D daripada Rajah A6.*

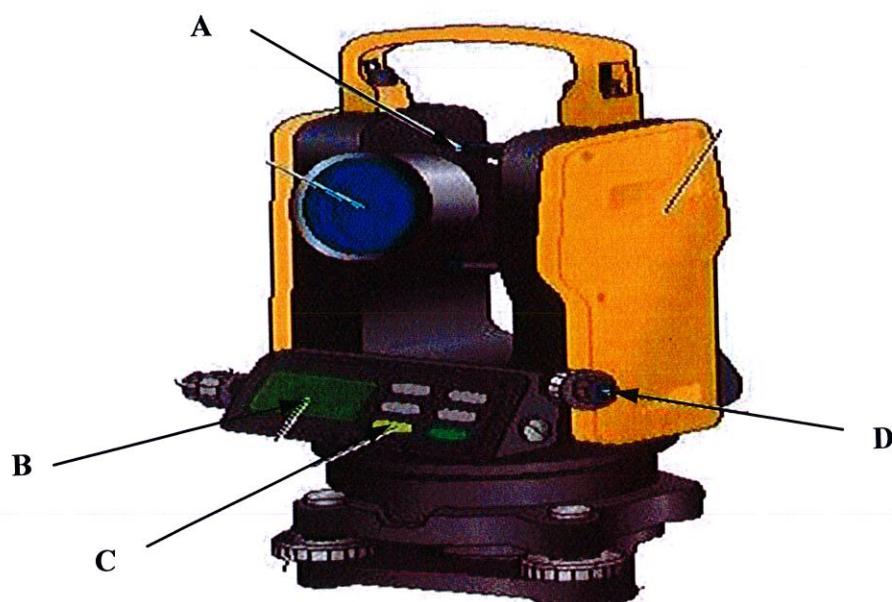


Figure A6/ Rajah A6

[4 marks]  
[4 markah]

CLO1  
C2**QUESTION 7**  
**SOALAN 7**

Explain the latest development of theodolite.

*Terangkan tentang perkembangan terbaru dalam peralatan teodolit.*

[4 marks]  
[4 markah]

CLO2  
C2**QUESTION 8**  
**SOALAN 8**

Calculate the latitude and departure based on the data in Table A8;

*Kirakan nilai latit dan dipat berdasarkan data seperti Jadual A8;*

Line station	Bearing	Distance (m)
1-2	$223^{\circ} 45' 40''$	86.112
2-3	$333^{\circ} 47' 15''$	81.796
3-4	$70^{\circ} 10' 40''$	50.660
4-1	$120^{\circ} 33' 45''$	55.784

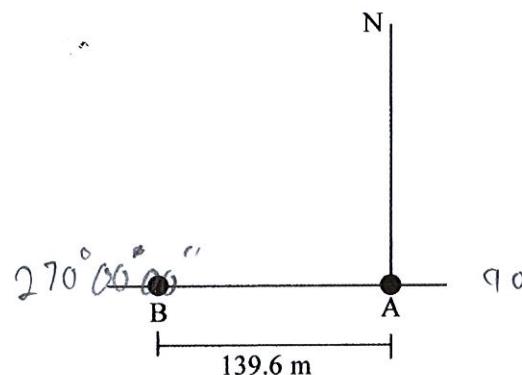
Table A8/ Jadual A8

[4 marks]  
[4 markah]

CLO2  
C2**QUESTION 9**  
**SOALAN 9**

A man travels from point A due west and reaches at point B. The distance between points A and B is 139.6 m. Calculate the latitude and departure of the line AB.

*Seorang lelaki telah berjalan dari titik A ke arah barat sehingga ke titik B. Jarak perjalanananya dari titik A ke titik B adalah 139.6m. Kira nilai latit dan dipat garisan AB.*



[4 marks]  
[4 markah]

CLO2  
C3**QUESTION 10**  
**SOALAN 10**

In a traverse ABCD, the coordinates of the points (in meter) are as follows. Calculate the area of the traverse.

*Koordinat bagi stesen terabas ABCD adalah seperti berikut. Kirakan nilai keluasan terabas.*

POINT	N	E
A	100	100
B	208	104
C	223	353
D	100	357
A	100	100

[4 marks]  
[4 markah]

**SECTION B : 60 MARKS**  
**BAHAGIAN B : 60 MARKAH**

**INSTRUCTION:**

This section consists of **FOUR (4)** structured questions. Answer **THREE (3)** questions only.

**ARAHAN:**

Bahagian ini mengandungi **EMPAT (4)** soalan struktur. Jawab **TIGA (3)** soalan sahaja.

CLO2  
C3

**QUESTION 1****SOALAN 1**

A leveling survey was conducted from BM 119 which the height of reduced level is 70.325 m to BM 120 which the reduced level height is 72.905m. Staff reading was recorded in the Leveling Form as in a table below.

Satu pengukuran ukur aras telah dijalankan dari BM 119 yang mana ketinggian aras larasnya adalah 70.325 m ke BM 120 di yang mana ketinggian aras larasnya adalah 72.905m. Bacaan-bacaan staf telah dicatatkan pada Borang Aras seperti jadual dibawah.

- a) Calculate the reduced level for each change point by using the Height of Collimation Method.

Kirakan aras laras setiap titik pindah dengan menggunakan Kaedah Tinggi garis Kolimantan.

[14 marks]

[14 markah]

- b) Show the calculation for arithmetic checking.

Tunjukkan kiraan bagi semakan aritmetik

[6 marks]

[6 markah]

BS (PB)	IS (PA)	FS (PH)	REMARKS (CATATAN)
2.304			BM 119 (70.325m)
2.407		1.800	A
0.877		2.514	B
	1.257		C
	1.266		D
1.211		1.693	E
3.704		1.000	F
		0.945	BM 120 (72.905m)

Table B1/ Jadual B1

CLO2  
C3**QUESTION 2**  
**SOALAN 2**

- a) Convert the following quadrantal bearing to whole circle bearing.

*Tukarkan bearing sukuan tersebut kepada bearing bulatan penuh.*

- i) N  $67^{\circ} 15' W$
- ii) S  $89^{\circ} 30' W$
- iii) N  $34^{\circ} 45'E$
- iv) S  $45^{\circ} 20'E$

[4 marks]  
[4 markah]

- b) Based on the Table B2, calculate the final bearing by using Local Attraction Method.

*Berdasarkan Jadual B2, kirakan bering muktamad dengan menggunakan Kaedah Tarikan Tempatan.*

Line	Distance (m)	Observed Bearing
1-2	90.0	$125^{\circ}00'$
2-1		$307^{\circ}15'$
2-3	95.0	$210^{\circ}30'$
3-2		$30^{\circ}30'$
3-4	100.0	$280^{\circ}45'$
4-3		$100^{\circ}30'$
4-1	85.0	$40^{\circ}15'$
1-4		$219^{\circ}00'$

Table B2/ Jadual B2

[16 marks]  
[16 markah]

CLO2  
C3**QUESTION 3**  
**SOALAN 3**

Station	BEARING / ANGLE		Mean	From Stn.	line	to Stn	Vertical angle
	Face left	Face right			Final bearing		
	Datum from	PA 1234	225° 30' 00	2	<b>225° 30' 00</b>	1	89° 56'
				BKL		BKL	269° 56'
1	225° 30' 00		98° 47' 00	2		3	89° 46'
2	BKL						
3		278 47' 00					
2		98° 47' 00	210° 25' 30	3	<b>210° 25 00</b>	4	89° 33'
3	PKT						
4	210° 25' 40						
3	30° 25' 30		249° 15' 40	4		5	89° 08'
4	PKT						
5		69° 15' 40					
4	69° 15' 40		280° 09' 20	5		1	91° 02'
5	PKT						
1		100° 09' 30					
5		280° 09' 20	45° 31' 10	1	<b>45° 30' 00</b>		
1	BKL						
2	45° 31' 10						

Line 1-2 read/ garisan 1-2 dibaca =

Exactly read / sepatutnya dibaca =

Error / tikaian =

Correction / pembetulan =

Fill the missing bearing and complete the booking of the traverse.

Isikan tempat kosong di ruangan bering dan lengkapkan pembukuan terabas tersebut.

[20 marks]  
[20 markah]

**QUESTION 4**  
**SOALAN 4**CLO2  
C3

From the given data as in Table B4, calculate:

*Daripada data yang telah diberikan dalam Jadual B4, dapatkan nilai:*

- (a) Latitude and departure of the lines

*Latit dan dipat untuk setiap garisan*[5 marks]  
[5 markah]

- (b) Correct the latitude and departure by using Bowditch's rule

*Betulkan Latit dan dipat dengan menggunakan kaedah Bowditch's.)*

Line	Bearing	Length (m)
AB	198° 59' 00"	229.000
BC	282° 14' 00"	131.350
CD	320° 13' 00"	80.000
DE	35° 13' 00"	199.250
EA	104° 26' 00"	142.600

Table B4/ Jadual B4

[15 marks]  
[15 markah]**SOALAN TAMAT**

1

2