(17)

SULIT

POLITEKNIK MALAYSIA

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI JUN 2018

DCG1012: BASIC SURVEYING COMPUTATION

TARIKH : 28 OKTOBER 2018
MASA : 8.30 PAGI – 10.30 PAGI (2 JAM)

Kertas ini mengandungi **EMPAT BELAS (14)** halaman bercetak.
Bahagian A: Esei Berstruktur (2 soalan)
Bahagian B: Esei Berstruktur (4 soalan)
Dokumen sokongan yang disertakan : **BORANG HITUNGAN LATIT DIPAT**

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION A: 50 MARKS
BAHAGIAN A: 50 MARKAH

INSTRUCTION:
This section consists of **TWO (2)** essay structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **DUA (2)** soalan esei berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1
SOALAN 1

CLO1
C1

(a) With the aid of a diagram, give the definition of Quadrant Bearing.
Dengan beserta gambarajah, berikan definisi Bering Sukuan.

[5 marks]
[*5 markah*]

CLO1
C2

(b) Compute the following conversion:
Hitungkan penukaran berikut:

i. Whole Circle Bearing to Quadrant Bearing
Bering Bulatan Penuh kepada Bering Sukuan:

a. 230° 35' 20"
b. 342° 20' 30"
c. 128° 40' 40"

ii. Quadrant Bearing (QB) to Whole Circle Bearing (WCB):
Bering Sukuan (BS) kepada Bering Bulatan Penuh (BBP):

a. S 25° 25' 00" E
b. N 10° 15' 30" W

[10 marks]
[*10 markah*]

CLO1
C3

(c) **Figure A1(c),** shows a closed traverse conducted with five station A, B, C, D and E, taken in clockwise order. From the data given, calculate the internal angle at station A, B, C , D and E.

Rajah A1(c), *menunjukkan satu terabas tertutup yang dijalankan dengan lima stesen iaitu A, B, C, D dan E yang diukur dalam susunan arah jam. Daripada data yang diberi, hitungkan nilai sudut dalaman di stesen A,B,C,D dan E.*

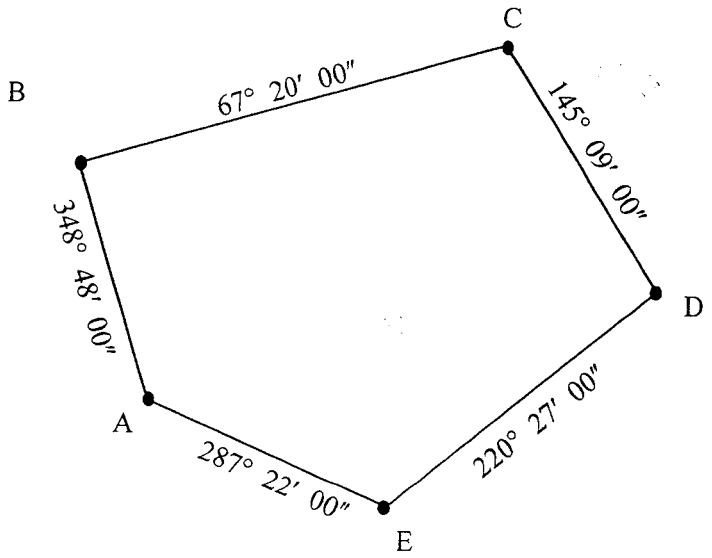

Figure A1 (c) / *Rajah A1 (c)*

[10 Marks]
[*10 Markah*]

QUESTION 2
SOALAN 2

CLO1
C1

(a) Based on the data shown in **Table A2 (a)**, the forward bearing of the following lines are given. Give the value of back bearing.

*Berdasarkan data yang ditunjukkan dalam **Jadual A2 (a)**, bering hadapan bagi garisan-garisan berikut diberikan. Berikan nilai bering belakang.*

Table A2 (a) / Jadual A2 (a)

Line/ ***Garisan***	**Forward Bearing/** ***Bering Hadapan***
1-2	91° 00′ 10″
2-3	150° 25′ 50″
3-4	260° 40′ 30″
4-5	340° 52′ 50″
5-6	329° 40′ 30″

[5 Marks]
[5 Markah]

CLO1
C2

(b) **Figure A2 (b)** shows a closed traverse from station A to station G. If bearing AB is 35°00'00", calculate bearing CB, CD, ED, EF and GF.

Gambarajah A2 (b) *menunjukkan terabas tertutup daripada stesen A ke stesen G. Jika bering AB adalah 35° 00' 00", kirakan bering CB, CD, ED, EF dan GF.*

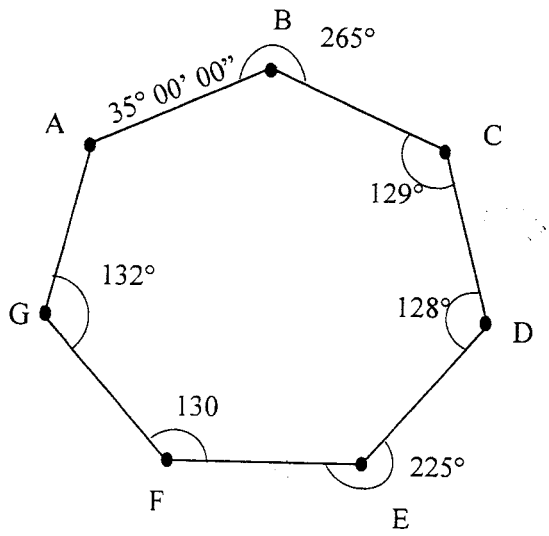

Figure A2 (b) / ***Rajah A2 (b)***

[10 Marks]

[*10 Markah*]

CLO1
C3

(c) A traverse was conducted by a group of students during fieldwork practical. The data obtained from the survey work are shown in **Figure A2(c)**.

Satu terabas telah diukur oleh sekumpulan pelajar semasa amali kerja luar. Data- data yang diperolehi daripada kerja luar tersebut ditunjukkan dalam ***Rajah A2(c).***

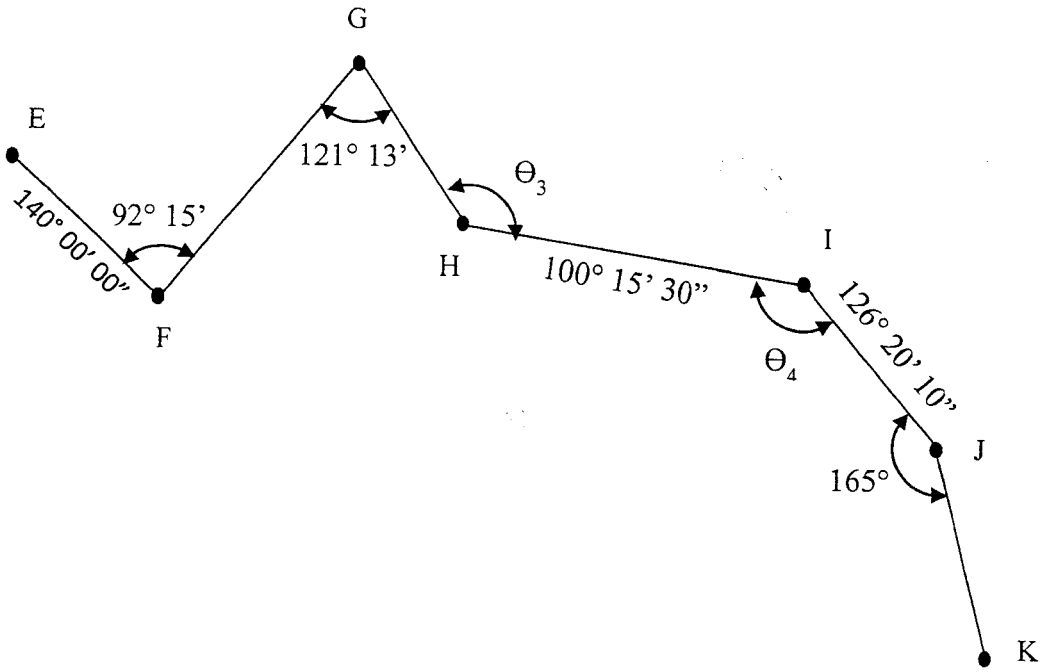

Figure A2 (c) / *Rajah A2 (b)*

Compute:

Hitungkan:

i. Bearing FG / *Bering FG*

ii. Bearing GH / *Bering GH*

iii. Angle Θ_3 / *Sudut* Θ_3

iv. Angle Θ_4 / *Sudut* Θ_4

v. Bearing JK / *Bering JK*

[10 Marks]

[10 *Markah*]

SECTION B: 50 MARKS
BAHAGIAN B: 50 MARKAH

INSTRUCTION:
This section consists of **FOUR (4)** essay structured questions. Answer **TWO (2)** questions only

ARAHAN:
*Bahagian ini mengandungi **EMPAT (4)** soalan esei berstruktur. Jawab **DUA (2)** soalan sahaja.*

QUESTION 1

SOALAN 1

CLO2
C1

(a) **Figure B1(a)** shows the Lot 242. By using Sines Formula, calculate the distance of line 2-3.

Rajah B1(a) *menunjukkan Lot 242. Dengan menggunakan Formula Sin, hitungkan jarak bagi garisan 2-3.*

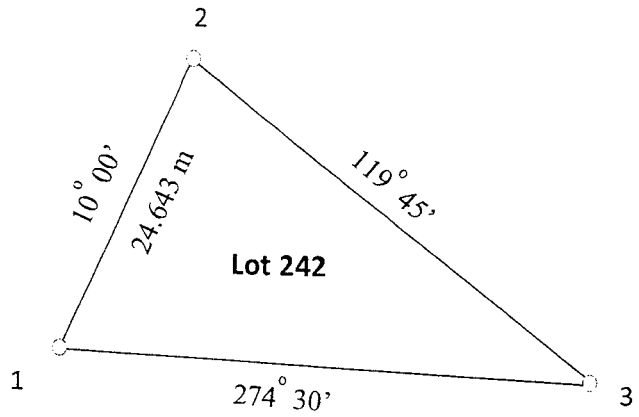

Figure B1(a) / *Rajah B1(a)*

[5 Marks]
[*5 Markah*]

CLO2
C2

(b) Based on **Table B1(b)**, compute value of latitude and departure for each line of this open traverse.

*Berdasarkan pada **Jadual B1(a)**, hitungkan nilai latit dan dipat bagi setiap garisan terabas terbuka ini.*

Table B1(b) / *Jadual B1(b)*

LINE	BEARING	DISTANCE (m)
1-2	45° 10' 00"	110.450
2-3	50° 40' 30"	121.330
3-4	66° 51' 00"	99.860
4-5	87° 01' 30"	169.270
5-6	67° 47' 00"	135.260

[5 Marks]

[*5 Markah*]

CLO2
C3

(c) Based on **Table B1 (c)**, calculate the area of traverse lot using Coordinate Method.

*Berdasarkan **Jadual B1(c)**, hitungkan luas terabas menggunakan Kaedah Koordinat.*

Table B1(c) / *Jadual B1(c)*

Line From – To / *Dari Garisan Ke*	Latitude / *Latit (m)*		Departure / *Dipat(m)*		Coordinate / *Koordinat (m)*	
	North (N) / *Utara (U)*	South (S) / *Selatan (S)*	East (E) / *Timur (T)*	West (W) / *Barat (B)*	North (N) / *Utara (U)*	East (E) / *Timur (T)*
1					100.00	100.00
2	69.56		133.63			
3		71.96	123.40			
4		145.53		85.72		
5	37.05			115.76		
1	110.88			55.55		

[15 Marks]

[*15 Markah*]

QUESTION 2

SOALAN 2

CLO2 C1 (a) Describe the traverse in land surveying.

Jelaskan maksud terabas dalam ukur tanah.

[5 marks]

[*5 markah*]

CLO2 C2 (a) **Table B2 (a),** show the data of traverse ABCDE . Sketch traverse ABCDE.

Jadual B2 (a) *menunjukkan data terabas ABCDE. Lakarkan terabas ABCDE. berikut:*

Table B2 (a) / *Jadual B2 (a)*

Station/ *Stesen*	**Bearing/ *Bering***	**Distance/ *Jarak* (m)**
A – B	N 62° 30' E	69.56
B – C	S 59° 45' E	142.85
C – D	S 30° 30' W	168.90
D – E	N 72° 15' W	121.55
E - A	N 26° 37' W	124.02

[5 marks]

[*5 markah*]

CLO2
C3

(b) If coordinate station A (N17594.48, E1234.96), B (N24343.45, E7994.42), C (N21364.73, E17913.83), D (N16286.43,E11039.68):

Jika koordinat stesen A (N17594.48, E1234.96), B (N24343.45, E7994.42), C (N21364.73, E17913.83), D (N16286.43, E11039.68):

i. Sketch the traverse using the given coordinate above.
Lakarkan terabas menggunakan koordinat yang diberi.

ii. Calculate bearing and distance station A- D, B-D and C-A, B-C.
Hitungkan bering dan jarak stesen A- D, B-D and C-A, B-C.

[15 marks]
[*15 markah*]

QUESTION 3

SOALAN 3

CLO2
C1

(a) Tangent Napier's Rules is one of the formula used to solve triangle problems in surveying. State **TWO (2)** conditions of the triangle for this formula can be used to solve the problems.

*'Tangent Napier's Rules' adalah salah satu formula yang digunakan untuk menyelesaikan masalah-masalah dalam kerja ukur . Nyatakan **DUA (2)** syarat bagi segitiga yang membolehkan formula ini digunakan dalam menyelasaikan masalah-masalah tersebut.*

[5 marks]
[*5 markah*]

CLO2
C2

(b) Based on **Figure B3 (b)**, assume the value of coordinate B.

*Berdasarkan **Rajah B3(b)**, anggarkan nilai koordinat B.*

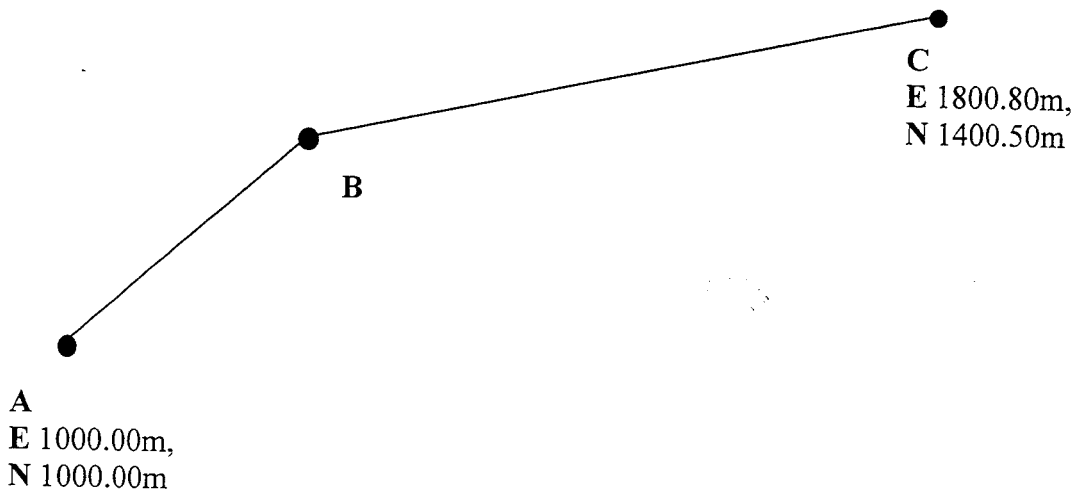

Figure B3(b) / *Rajah B3(b)*

[5 marks]

[*5 markah*]

CLO2
C3

(c) The distance and bearing of a traverse are given in **Table 3B (c).** Determine the area of the traverse from the coordinates. Assume that coordinates of A is (N 0.00, E 0.00)

*Jarak dan bering bagi sebuah terabas telah diberikan seperti **Jadual B3 (c).** Tentukan keluasan terabas ini menggunakan kaedah koordinat. Anggapkan koordinat A ialah (U 0.00, T 0.00)*

Table B3 (c)/ *Jadual B3 (c)*

Station/*Stesen*	Bearing/ Bering	Distance/ *Jarak* (m)
AB	60° 25' 00"	350.00
BC	94° 30' 00"	329.90
CD	154° 15' 00"	310.01
DE	244° 30' 00"	370.02
EF	277° 15' 00"	300.12
FA	331° 46' 00"	288.01

[15 marks]

[*15 markah*]

QUESTION 4
SOALAN 4

CLO2 C1

(a) With the aid of a diagram, list **TWO (2)** parameters needed for a closed traverse.

*Dengan bantuan gambarajah, senaraikan **DUA (2)** parameter yang perlu ada bagi sesebuah terabas tertutup?*

[5 marks]

[*5 markah*]

CLO2 C2

(b) An observation of a traverse ABCD was carried out around a building site as shown in **Figure B4 (b)**. Calculate the value and different of latitude and departure of the traverse.

*Satu cerapan terabas ABCD telah dijalankan mengelilingi sebuah tapak bangunan seperti yang ditunjukkan dalam **Rajah B4 (b)**. Hiungkan nilai dan beza latit dan dipat bagi terabas tersebut.*

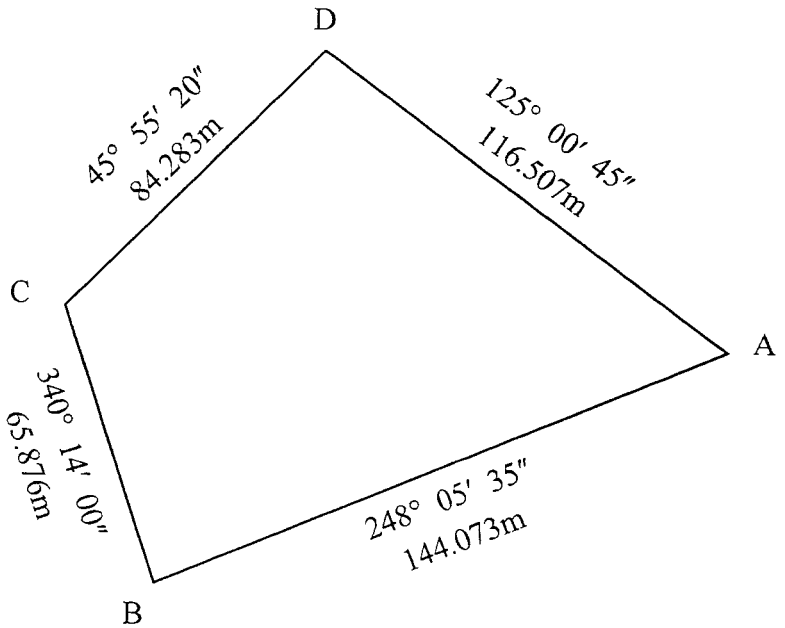

Figure B4 (b) / *Rajah B4 (b)*

[5 marks]

[*5 markah*]

CLO2
C3

(c) Based on traverse data shown in **Table B4 (c)**, calculate the area value of the traverse by using Double Meridian Distance method.
*Berdasarkan data terabas yang ditunjukkan dalam **Jadual B4 (c)**, kirakan nilai keluasan terabas tersebut menggunakan kaedah Dua Kali Jarak Meridian.*

Table B4 (c)/*Jadual B4 (c)*

Line/ *Garisan*	**Bearing/ *Bering***	**Distance/ *Jarak* (m)**
1-2	68° 42' 10"	56.128m
2-3	96° 32' 20"	61.216m
3-4	181° 10' 20"	64.267m
4-5	277° 58' 20"	70.122m
5-1	314° 08' 56"	59.027m

[15 marks]
[*15 markah*]

SOALAN TAMAT

BORANG HITUNGAN LATIT DIPAT

Dr - Ke	Bearing	Jarak	Latit		Dipat		2 X Latit	2 X Dipat	Koordinat	
			Utara	Selatan	Timur	Barat			U/S	T/B