

SULIT



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENGAJIAN TINGGI**

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI I : 2022/2023

DCG10022: SURVEYING COMPUTATION

TARIKH : 27 DISEMBER 2022

MASA : 2.30 PM - 4.30 PM (2 JAM)

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

Bahagian A: Soalan Subjektif (2 Soalan)

Bahagian B: Soalan Subjektif (4 Soalan)

Dokumen sokongan yang disertakan : Borang Latit & Dipat

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A: 50 MARKS**BAHAGIAN A : 50 MARKAH****INSTRUCTION:**

This section consists of **TWO (2)** subjective questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi DUA (2) soalan subjektif. Jawab semua soalan.

QUESTION 1**SOALAN 1**

CLO1

C2

- (a) Differentiate between bearing and angle.

Bandingkan antara bering dan sudut.

[5 marks]

[5 markah]

CLO1

C2

- (b) The observation data for station 1, 2, 3 and 4 is shown in Figure A1(b) below.

Based on the data, compute the internal angle at station 3 and station 4.

Data cerapan bagi stesen 1, 2, 3 dan 4 ditunjukkan dalam Rajah A1(b) di bawah. Berdasarkan data tersebut, hitungkan sudut dalam di stesen 3 dan stesen 4.

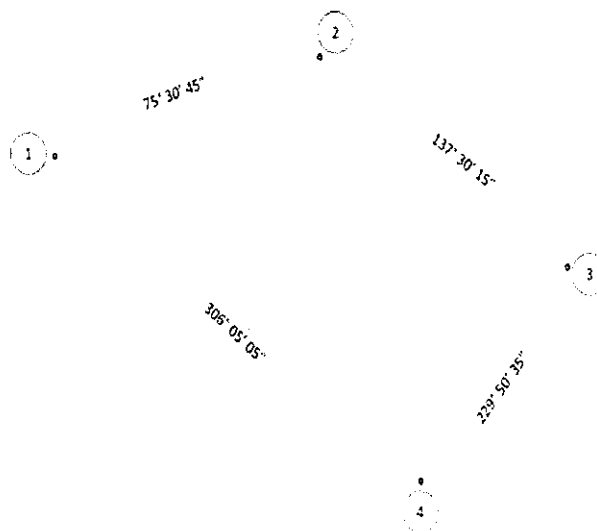


Figure A1(b)/ Rajah A1(b)

[10 marks]

[10 markah]

CLO1
C2

- (c) Based on Table A1(c), compute conversion bearing from Quadrant Bearing to Whole Circle Bearing and Whole Circle Bearing to Quadrant Bearing.

Berdasarkan Jadual A1(c), hitungkan pertukaran bering daripada Bering Sukuan kepada Bering Bulatan Penuh dan Bering Bulatan Penuh ke Bering Sukuan.

Table A1(c)/ *Rajah A1(c)*

Survey Line/ <i>Garis Ukur</i>	Bearing/ <i>Bering</i>
1-2	91° 30' 00"
2-3	N/ U 45° 00' 20" W/ B
3-4	202° 15' 40"
4-5	S/ S 89° 00' 30" W/ B
5-1	312° 00' 45"

[10 marks]

[10 markah]

QUESTION 2

SOALAN 2

CLO2
C2

- (a) Differentiate between latitude and departure.

Bandingkan antara latit dan dipat.

[5 marks]

[5 markah]

CLO2
C3

- (b) Referring to Table A2(b), compute the linear misclosure of the traverse.
Merujuk kepada Rajah A2(b), hitungkan tikaian lurus terabas tersebut.

Table A2(b)/ *Rajah A2(b)*

Survey Line/ <i>Garis Ukur</i>	Bearing/ <i>Bering</i>	Distance (m)/ <i>Jarak (m)</i>
1-2	63° 30' 00"	63.264
2-3	77° 25' 00"	75.119
3-4	173° 43' 30"	82.147
4-5	231° 55' 00"	87.273
5-1	322° 19' 00"	114.829

[10 marks]

[10 markah]

CLO2
C3

- (c) Referring to Table A2(c), compute the bearing station 3 to 4 and distance 4 to 5.
Merujuk kepada Rajah A2(c), hitungkan bering stesen 3 ke 4 dan jarak 4 ke 5.

Table A2(c)/ *Rajah A2(c)*

Survey Line <i>Garisan Ukur</i>	Bearing/ <i>Bering</i>	Distance (m)/ <i>Jarak (m)</i>
1-2	110° 15' 20"	60.123
2-3	200° 30' 40"	40.567
3-4	?	50.234
4-5	355° 15' 20"	?
5-1	13° 43' 40"	15.217

[10 marks]

[10 markah]

SECTION B : 50 MARKS**BAHAGIAN B : 50 MARKAH****INSTRUCTION:**

This section consists of **FOUR (4)** subjective questions. Answer **TWO (2)** questions only.

ARAHAN:

Bahagian ini mengandungi EMPAT (4) soalan subjektif. Jawab DUA (2) soalan sahaja.

QUESTION 1**SOALAN 1**

CLO2
C3

- (a) The solution for triangle problems is to use the sine and cosine formula. Based on Figure B1(a), compute the bearing from Station 4 to 5 and the bearing from Station 5 to 6.

Penyelesaian masalah segitiga ialah dengan menggunakan formula sinus dan kosinus. Berdasarkan Rajah B1(a), hitungkan bering daripada Stesen 4 ke 5 dan Stesen 5 ke 6.

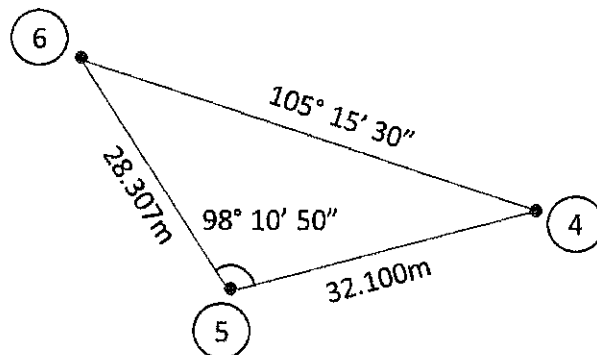


Figure B1(a)/ Rajah B1(a)

[10 marks]

[10 markah]

CLO2
C3

- (b) Based on Figure B1(b), an observation was made to compute the height of pole from Station B to Station D. The bearing of Station A to Station B and Station B to Station C are $63^{\circ} 40' 07''$ and $113^{\circ} 44' 58''$ respectively. While the bearing and distance of Station A to Station C is $263^{\circ} 40' 29''$ and 78.525 m respectively. The angle reading from Station A to Station D and Station C to Station D that

is on top of the pole is $41^\circ 09' 22''$ and $52^\circ 00' 32''$ respectively. Compute the height of the pole at Station B to Station D from station A and C.

Berdasarkan Rajah B1(b), satu cerapan dibuat untuk mendapatkan ketinggian pole daripada Stesen B ke Stesen D. Bering Stesen A ke Stesen B dan Stesen B ke Stesen C ialah masing-masing $63^\circ 40' 07''$ dan $113^\circ 44' 58''$. Sementara bering dan jarak Stesen A ke Stesen C ialah masing-masing $263^\circ 40' 29''$ dan 78.525 m. Bacaan sudut daripada Stesen A ke Stesen D dan daripada Stesen C ke Stesen D, iaitu titik puncak pole masing-masing ialah $41^\circ 09' 22''$ dan $52^\circ 00' 32''$. Hitungkan ketinggian pole Stesen B ke Stesen D daripada stesen A dan C.

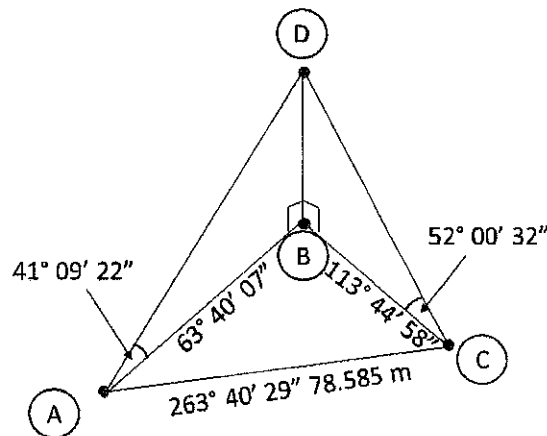


Figure B1(b)/ Rajah B1(b)

[15 marks]

[15 markah]

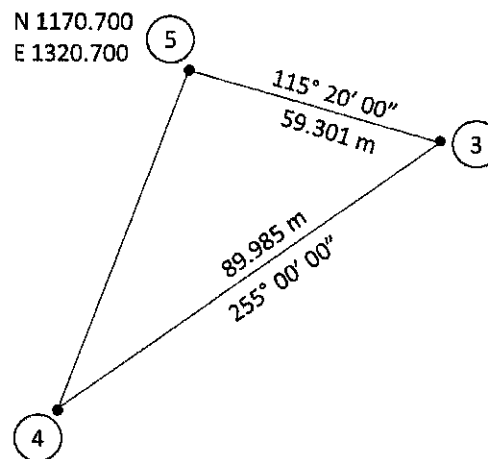
QUESTION 2

SOALAN 2

CLO2
C3

- (a) The coordinates of a station can be determined if the survey line has a bearing and distance with other station that has coordinate. Based on Figure B2(a), compute the coordinate at Station 3 and Station 4.

Koordinat bagi satu stesen boleh ditentukan jika garis ukur tersebut mempunyai bering dan jarak dengan koordinat stesen lain. Berdasarkan Rajah B2(a), hitungkan koordinat di Stesen 3 dan Stesen 4.

Figure B2(a)/ *Rajah B2(a)*

[10 marks]

[10 markah]

CLO2
C3

- (b) There are various methods to calculate lot area. One of the method is to use the coordinate method. Based on Table B2(b), compute the area for this lot.

Terdapat pelbagai kaedah untuk mengira keluasan lot. Salah satu kaedah adalah dengan menggunakan kaedah koordinat. Berdasarkan Jadual B2(b), hitungkan luas bagi lot tersebut.

Table B2(b)/ *Jadual B2(b)*

Station From – To/ Stesen Dari Ke	Coordinate/ <i>Koordinat</i>			
		North (m)/ <i>Utara (m)</i>		East (m)/ <i>Timur (m)</i>
1		1000.000		500.000
2		1255.960		625.660
3		1102.430		1216.310
4		408.360		1023.620
5		611.330		1017.560
1		1000.000		500.000

[15 marks]

[15 markah]

QUESTION 3**SOALAN 3**

Lot ABCDE in Figure B3 will be divided into two parts with same area by a divider line XY. Station X is at line A-B and the distance is 1/3 from station A. Two triangles were created to obtain the bearing and distance of X-Y. An area of AXYE is 9718.936 m².

Lot ABCDE dalam Rajah B3 perlu dibahagikan kepada dua lot dengan keluasan yang sama menggunakan garisan XY sebagai garis pembahagi. Stesen X berada di atas garisan A-B dan jaraknya 1/3 daripada stesen A. Dua segitiga telah dibentuk untuk mendapatkan bering dan jarak X-Y. Luas AXYE ialah 9718.936 m².

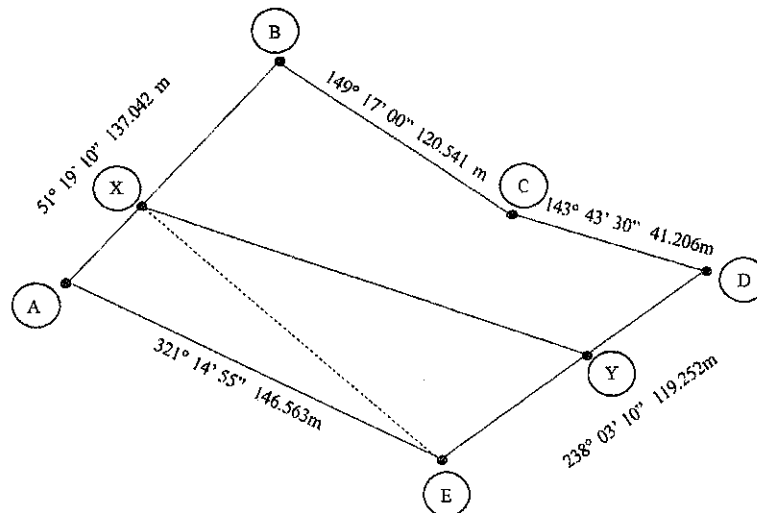


Figure B3/ Rajah B3

Compute:

Hitungkan:

CLO2

(a) Bearing and distance of X-E

C3

Bering dan jarak X-E

[10 marks]

[10 markah]

CLO2

(b) Bearing and distance of X-Y

C3

Bering dan jarak X-Y

[15 marks]

[15 markah]

QUESTION 4

SOALAN 4

CLO2

C3

- (a) The three distances problem involves computation for a straight line that cannot be measured directly because there are obstacles in between. Based on the data given in Figure B4(a), compute the distance of R-Q.

Masalah tiga jarak melibatkan hitungan untuk satu garisan lurus yang tidak dapat diukur secara terus kerana terdapat halangan di antaranya.

Berdasarkan data yang diberikan dalam Rajah B4(a), hitungkan jarak R-Q.

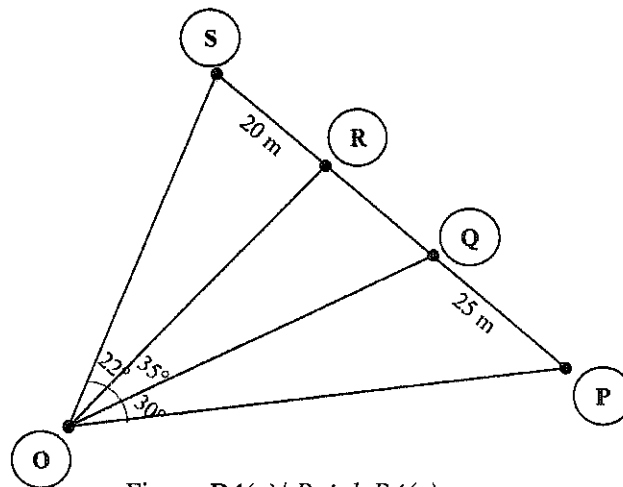


Figure B4(a)/ Rajah B4(a)

[10 marks]

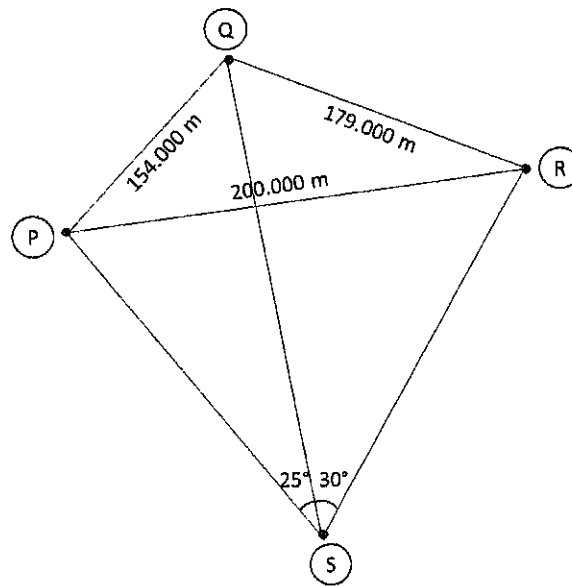
[10 markah]

CLO2

C3

- (b) The three points problem or resection is used to determine the position of a station based on three known point on the earth. Based on Figure B4(b), the position of a ship is denoted by Station S. Station P, Q and R are the known station on the ground. Compute the distance of Q to S.

Masalah tiga titik atau reseksi digunakan untuk menentukan kedudukan satu titik berdasarkan kepada tiga titik yang diketahui kedudukannya di atas permukaan bumi. Berdasarkan Rajah B4(b), kedudukan sebuah kapal ditanda di Stesen S. Titik-titik A, B dan C adalah stesen-stesen yang telah diketahui kedudukannya di daratan. Hitungkan jarak Q ke S.

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

[15 marks]

[15 markah]

.

.

.

SOALAN TAMAT

NO. PENDAFTARAN:

NO. SOALAN:

LATITUDE DEPARTURE SHEET COMPUTATION
BORANG HITUNGAN LATIT DIPAT

[illegible]

NO. SOALAN: _____

LATITUDE DEPARTURE SHEET COMPUTATION
BORANG HITUNGAN LATIT DIPAT

[illegible]

NO. PENDAFTARAN:

NO. SOALAN:

LATITUDE DEPARTURE SHEET COMPUTATION
BORANG HITUNGAN LATIT DIPAT

[illegible]

NO. PENDAFTARAN:

NO. SOLAN:

LATITUDE DEPARTURE SHEET COMPUTATION
BORANG HITUNGAN LATIT DIPAT

[illegible]

NO. PENDAFTARAN:

NO. SOALAN:

LATITUDE DEPARTURE SHEET COMPUTATION
BORANG HITUNGAN LATIT DIPAT

[illegible]