3

SULIT

POLITEKNIK
Jabatan Pengajian Politeknik

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN KEJURUTERAAN AWAM

PEPERIKSAAN AKHIR

SESI JUN 2013

CC 201: ENGINEERING SURVEY 2

TARIKH : 22 OKTOBER 2013
TEMPOH : 2 JAM (11.15 AM – 1.15 PM)

Kertas ini mengandungi **SEBELAS (11)** halaman bercetak.
Bahagian A: Soalan Pendek (10 soalan)
Bahagian B: Struktur (4 soalan)
Dokumen sokongan yang disertakan : Kertas Graf

JANGAN BUKA KERTAS SOALAN INI 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.*

QUESTION 1
SOALAN 1

CLO1
C1

State **FOUR (4)** purposes of calculating the area and volume in the construction works.

*Nyatakan **EMPAT (4)** tujuan daripada hitungan keluasan dan isipadu dalam kerja-kerja pembinaan.*

[4 marks]
[4 *markah*]

QUESTION 2
SOALAN 2

CLO1
C1

State **FOUR (4)** characteristic of Simpson's Rule to calculate the area enclosed by straight line and curve.

*Nyatakan **EMPAT (4)** ciri-ciri Hukum Simpson bagi mengira keluasan yang dibatasi oleh garis lurus dan lengkung.*

[4 marks]
[*4 markah*]

QUESTION 3

SOALAN 3

CLO1
C2

Table A3 shows perpendicular offsets taken from a chain line to a hedge:

Jadual A3 menunjukkan data yang diambil daripada garis ukur ke pagar:

Table A3

Distance (m) *Jarak (m)*	0	6	12	18	24	30	36
Offsets (m) *Ofset (m)*	5.40	4.50	3.60	2.70	1.80	2.25	3.15

Calculate the area between the chain line and the offsets using Simpson's Rule.

Kirakan keluasan kawasan dengan menggunakan kaedah Simpson.

[4 marks]

[*4 markah*]

QUESTION 4

SOALAN 4

CLO1
C2

Compute the sectional area of an embankment which its base has 10m and side slope of 1:2. Meanwhile the central height of the embankment is 2.5m.

Kirakan luas keratan rentas untuk tambakan yang mempunyai tapak 10m dan kecerunan sisi 1:2. Manakala ketinggian tambakan adalah 2.5m.

[4 marks]

[*4 markah*]

QUESTION 5

SOALAN 5

CLO1
C2

The area of a cross section is 52 m^2. The height and base of the cross section are 4m and 6m. Respectively calculate the gradient of the cross section.

Luas bagi keratan rentas adalah 52 m^2. *Nilai bagi tinggi dan panjang tapak masing-masing adalah 4m dan 6m. Kirakan kecerunan bagi keratan rentas.*

[4 marks]
[*4 markah*]

QUESTION 6

SOALAN 6

CLO1
C1

Figure A6 shows the illustration of a Total Station. Label the components of the Total Station at Figure 1 below.

Rajah A6 menunjukkan ilustrasi sebuah Total Station. Labelkan komponen-komponen Total Station dalam Rajah A6 di bawah.

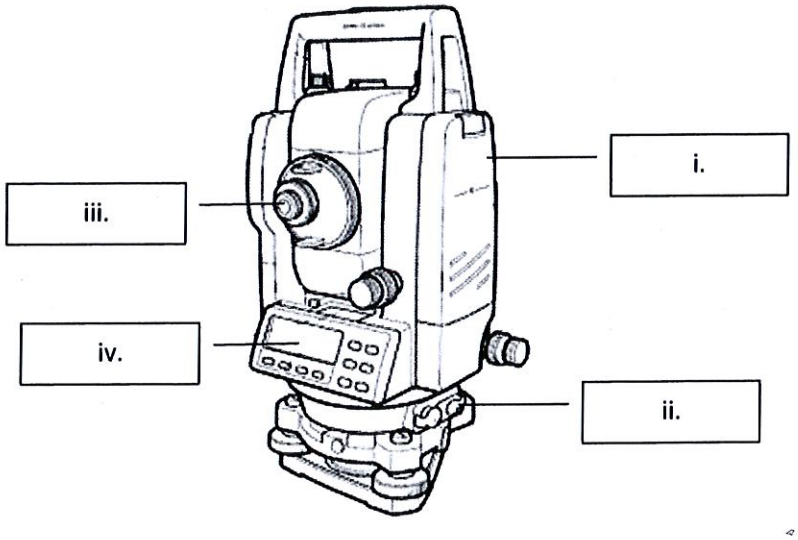

Figure A6/ Rajah A6

[4 marks]
[*4 markah*]

QUESTION 7

SOALAN 7

CLO1
C1

Describe the Microwave system in Electronic Distance Mesurement (EDM).

Huraikan secara ringkas sistem gelombang mikro dalam EDM.

[4 marks]

[*4 markah*]

QUESTION 8

SOALAN 8

CLO1
C2

There are three type for EDM measuring a distance. Explain the TWO **(2)** of those EDM.

*Terdapat tiga kaedah EDM untuk mengukur jarak. Terangkan **DUA (2)** kaedah tersebut.*

[4 marks]

[*4 markah*]

QUESTION 9

SOALAN 9

CLO1
C2

The wave travel from station A to station B with a frequency of 5 Hz and velocity of 2.5 m/s respectively. The counter showed that 10.5 number of waves detected approaching station B. Calculate the horizontal distance from A to B.

Satu gelombang bergerak dari stesen A ke stesen B dengan frekuensi 5Hz dan halaju 2.5 m/s. Mesin pembilang menunjukkan 10.5 nombor gelombang dikesan bila mendekati stesen B. Kirakan jarak mendatar A ke B.

[4 marks]

[*4 markah*]

QUESTION 10

SOALAN 10

CLO1
C2

Data given below was obtained by a surveyor at field work on 20 March 2013.

Data di bawah ini telah dicerap oleh seorang Jurukur di lapangan pada 20 Mac 2013.

Slope distance/ *jarak cerun* =100.000m

Vertical angle/ *sudut pugak* = 30°.

Calculate the horizontal distance. [4 marks]

Kirakan jarak mendatar. [*4 markah*]

SECTION B : 60 MARKS

BAHAGIAN B : 60 MARKAH

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1

SOALAN 1

Table B1/ Jadual B1

CLO1
C3

Station */stesen*	Horizontal bearing/ *Bering ufuk*	Vertical Angle/ *Sudut pugak*	Stadia reading/ *Bacaan stadia*			Remarks/ *catatan*
			Upper/ *atas*	Middle/ *tengah*	Lower/ *bawah*	
A	60°40'30"	6°30'	x	1.665	0.995	Station B (RL_B=60 m)
	110°20'20"	-5°10'	1.752	y	1.000	Station C

Table B1 shows the tachymetry survey data using vertical staff method. The multiplying constant for the instrument is 100 and additive constant is 0. If the instrument height is 1.35m. Calculate:

a) Value of x and y [2 marks]

b) Reduce level at station A and station C [10 marks]

c) Gradient between station B and station C [8 marks]

Jadual B1 menunjukan data dari kerja-kerja takimetri menggunakan Kaedah Staf Pugak. Pekali pendarab alat tersebut ialah 100 dan pekali penambah 0. Jika ketinggian alat theodolit tersebut ialah 1.35m. kirakan:

a) Nilai x dan y [*2 markah*]

b) Aras laras stesen A dan stesen C [*10 markah*]

c) Kecerunan antara stesen B dan stesen C [*8 markah*]

QUESTION 2

SOALAN 2

CLO1
C3

(a) The data in Table B2 are from a roadway project starting from CH0 to CH1000m. If the ground volume has 20% shrinkage, calculate the soil volume and the cumulative volume.

Data Jadual B2 diperolehi daripada satu projek ukur jalanraya dari rantaian CH0 hingga CH1000m. Jika diberi faktor pengecutan adalah 20%, kirakan isipadu tanah dan isipadu kelompok.

Table B2 : Data from a roadway project

Jadual B2: Data diperolehi daripada satu projek ukur jalanraya

Chainage (m) *Rantaian (m)*	Cut (m^3) *Isipadu korekan (m^3)*	Fill (m^3) *Isipadu timbusan (m^3)*
0		
100	*850*	
200	*1900*	
300	*2300*	
400	*2650*	
500	*1800*	
600		*4000*
700		*5000*
800		*2100*
900	*2000*	
1000	*1800*	

[11 marks]

[*11 markah*]

CLO1
C3

(b) Plot a mass haul diagram using a suitable scale.

Plot graf gambarajah urungan padu pada skala yang sesuai

[9 marks]

[*9 markah*]

QUESTION 3

SOALAN 3

CLO1
C3

Two straight tangent lines are extended to meet at intersection point I. The obtained intersection angle is 30^0. If the tangent lines are connected to a circular curve with a radius of 200m, interval is 15m and Intersection chainage is 2259.59m, by using the Deflection Angle Method, calculate;

Dua garis lurus tangen dipanjangkan bertemu di titik persilangan I. Sudut persilangan yang diperolehi adalah 30^0. Jika garis tangen dihubungkan oleh lengkung bulat dengan jejari 200m, sela adalah 15m dan rantaian I adalah 2259.59m, dengan menggunakan Kaedah Sudut Pesongan, kirakan:

(a) Tangent length, T and curve length, L_C. Given $T = R \tan(\theta/2)$ and $L_C = \pi R \times \theta / 180^0$

Garis tangen, T dan panjang lengkung, L_C. Diberi $T = R \tan(\theta/2)$ and $Lc = \pi R \times \theta / 180^0$

[4 marks]

[*4 markah*]

(b) Chainage of T_1 and Chainage of T_2

Rantaian T_1 dan Rantaian T_2 [2 marks]

[*2 markah*]

(c) Data of Deflection Angle Method is in Table B3. Given deflection angle, $\delta = [(1718.9 \times C/60R]$. Complete the table on the next page.

Data Kaedah Sudut Pesongan dalam Jadual B3. Diberi Sudut pesongan, $\delta = [(1718.9 \times C/60R)]$. Lengkapkan jadual di sebelah.

Table B3: Data of Deflection Angle Method

Jadual B3: Data Kaedah Sudut Pesongan

Station	Chainage (m)	Sub Chord,C (m)	Individu Deflection Angle (δ^o)	Cumulative Deflection angle (δ^0)
T_1				
1				
2				
3				
4				
5				
6				
7				
T_2				

[14 marks]

[*14 markah*]

QUESTION 4

SOALAN 4

CLO1 C2

(a) Traveller and Sight Rail are an instrument that are used to fill and cut for construction of earthwork. Explain how both instruments are used with the aid of a diagram.

Traveller dan Rel Tenang adalah alatan yang digunakan untuk kerja penimbusan dan pemotongan bagi pembinaan kerja tanah. Jelaskan bagaimana kedua-dua alatan digunakan dalam kerja tersebut dgn berbantukan gambarajah.

[5 marks]

[5 *markah*]

CLO1
C3

(b) An existing culvert at P will be connected to point Q and R with a gradient decreased of 1 in 150. The distance of PQ and QR are respectively 27.12m and 54.11m. Respectful calculate the staff reading should be read during planting the Sight Rails at points P, Q and R. The height of traveler is 2.5m. Below are the staff readings on earth surface for related points and other data.

Staff reading at TBM = 0.39 m
Staff reading at P = 0.16 m
Staff reading at Q = 0.35 m
Staff reading at R = 1.17 m
Staff reading at invert level of culvert at P = 2.84 m
Reduce Level of TBM = 89.52 m

Satu pembentung sediaada di P akan disambungkan ke titik Q dan R dengan cerun menurun 1 dalam 150. Jarak PQ dan QR masing-masing adalah 27.12 m dan 54.11 m. Kirakan bacaan staff yang perlu dibaca semasa menanam Rel Tenang di titik P, Q dan R. Ketinggian Traveler adalah 2.5 m. Berikut diberi bacaan staf di atas permukaan bumi bagi titik-titik berkaitan dan lain-lain data.

Bacaan staf di TBM = 0.39 m
Bacaan staf di P = 0.16 m
Bacaan staf di Q = 0.35 m
Bacaan staf di R = 1.17 m
Bacaan staf bagi aras dasar pembentung di P = 2.84 m
Aras Laras TBM = 89.52 m

[15 marks]
[*15 markah*]

SOALAN TAMAT