

8

POLITEKNIK
Jabatan Pengajian Politeknik

EXAMINATION AND EVALUATION DIVISION
DEPARTMENT OF POLYTECHNIC EDUCATION
(MINISTRY OF HIGHER EDUCATION)

CIVIL ENGINEERING DEPARTMENT

FINAL EXAMINATION

CC201- ENGINEERING SURVEY 2

DATE : 22 NOVEMBER 2012 (THURSDAY)
DURATION : 02.30 PM – 04.30 PM

This paper consists of **EIGHT (8)** pages including the front page.

Section A : Essay (2 questions – answer all)

Section B: Essay (3 questions – answer 2 questions)

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BY THE CHIEF INVIGILATOR

(The CLO stated is for reference only)

SECTION A**ESSAY QUESTION (50 marks)****INSTRUCTION:**

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

QUESTION 1

- a) Figure A(1)a below illustrated tachymetry with Tangential System. If Height of Instrument was measured as 1.520m, calculate;
- Horizontal Distance (H) between point A and point B.

[CLO 1: C2]

(5 marks)

- Reduced Level of point A, if Reduced Level of point B is 80.000m.

[CLO 1: C2]

(8 marks)

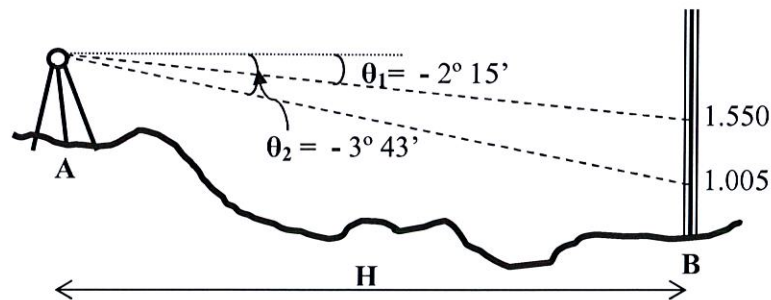


Figure A(1)a

- b) Find Horizontal Distance of X-Y measured by Substance System if substance bar length is 4.500m as in Figure A(1)b.

[CLO 1: C2]

(12 marks)

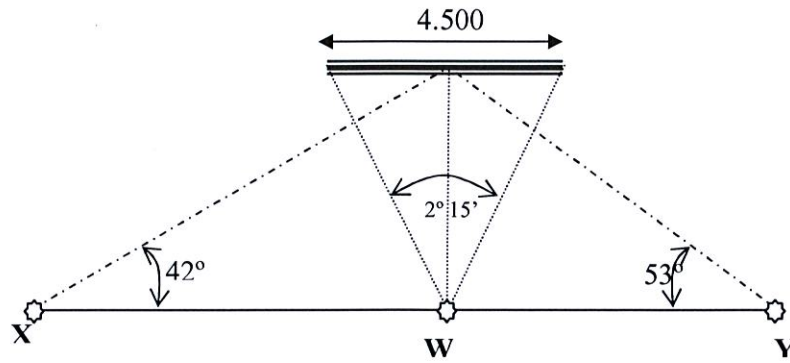


Figure A(1)b

QUESTION 2

- a) Nowadays the use of Electronic Distance Measurement (EDM) has been increased. List **FIVE (5)** common brands of EDM in current market.

[CLO3: C1]

(5 mark)

- b) Electronic Distance Measurement device can be classified according to the types of wave, such as :

- Microwave
- Infra Red Wave
- Laser

Discuss briefly **TWO (2)** out of **THREE (3)** types of the above waves.

[CLO3: C1]

(10 mark)

- c) Explain briefly **TWO (2)** types of instrument error in EDM.

[CLO3: C1]

(10 mark)

SECTION B

ESSAY QUESTION (50 marks)

INSTRUCTION:

This section consists of **THREE (3)** essay questions. Answer **TWO (2)** questions only.

QUESTION 1

- a) The following Figure B(1)a shows the reduced level of a rectangular plot which is to be excavated to a uniform depth of 9 meters above datum. Calculate the average depth and the volume of earth to be excavated.

[CLO2: C3]

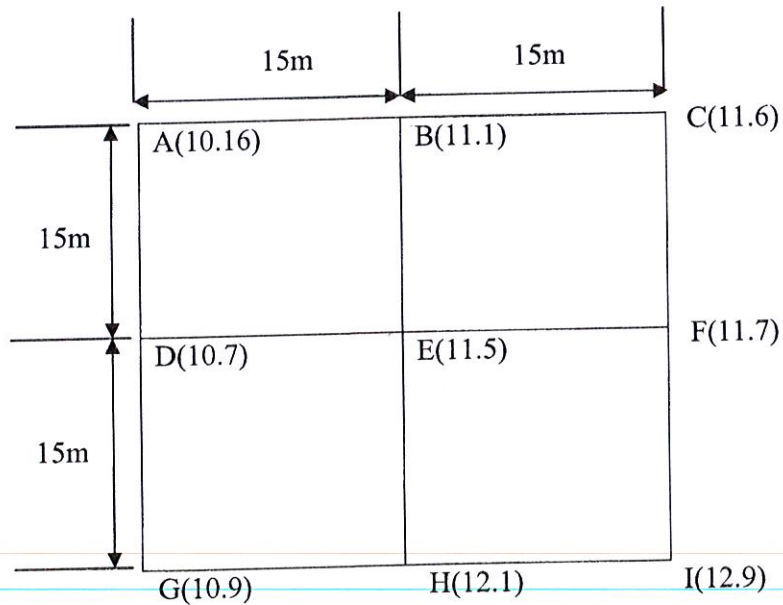


Figure B(1)a.

(14marks)

- b) By referring to Figure B(1)b, identify the balance line, freehaul distance, overhaul distance, freehaul volume and overhaul volume. Calculate the haul, overhaul and freehaul.

[CLO2: C3]

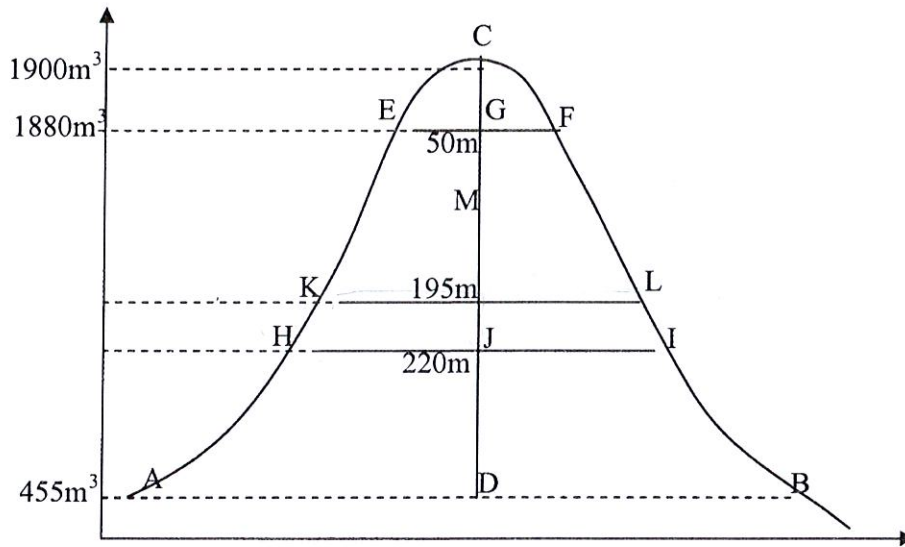


Figure B(1)b

(11 marks)

QUESTION 2

Two straight lines that intersect at a deflection angle $50^{\circ} 00' 00''$ are connected by a circular curve with radius 400 m. Chain age at the intersection point is 1692.020 m. Calculate the setting out at 25m interval. Given bearing at T_1I is $60^{\circ} 00' 00''$, prepare the suitable table. Find:

[CLO2: C3]

- i. Tangent length
- ii. Length of circular arc
- iii. Chain age
- iv. Deflection angle with one (1) theodolite.

(25 marks)

QUESTION 3



Area A = Area B + 1/2 B

a) Explain **FIVE (5)** responsibilities of a Setting Out Engineer.

[CLO2: C3]
(5 marks)

b) The data for setting out of propose drainage in primary school project are as follow :

[CLO2: C3]

Invert level at point A	= 28.321m
Gradient Drainage from point A to point B	= 1: 75 (decreased)
Distance from point A to point B	= 50m
TBM	= 32.41m
Back sight (staf on TBM)	= 1.122m
Intermediate sight (staf at point A)	= 2.232m
Fore Sight (staf at drain point B)	= 3.100m
Traveller Height	= 3.0 m

Calculate:

- i. Height of rail at point A and point B
- ii. Depth of excavation at point A and point B

(20marks)

