

THE HONG KONG POLYTECHNIC UNIVERSITY
HONG KONG COMMUNITY COLLEGE

Subject Title : Survey Adjustment

Subject Code : CCN2315

Session : Semester Two, 2017/18

Numerical Answers

Question A1

(b)(i) Mean = $60^{\circ}25'12.31''$, $S = 0.1370''$

(b)(ii) Residuals of Q1 = $0.11''$, Q3 = $-0.09''$

Question A2

(a) $0.2261 < \frac{\sigma_1^2}{\sigma_2^2} < 4.5356$

(b) $0.7528 < \sigma^2 < 3.9894$

Question A4

(a) 221.7025 m

(b) ± 1.8399 mm

Question B1

(a) 9.3512"

(b) 5.4869 mm

(c)(ii) $A = (60.0753 \ 0.3827 \ 0.3827)$

Question B2

(a) weighted mean = 9.0039 m, Elev. of B = 24.2589 m

(b) ± 0.0011 m

(c)(ii) $x = 20.03$, $y = 60.26$

(c)(iii) 80.29 m

Question B3

(a) -10"

(c) $v_1 = 3.6364''$, $v_2 = 4.5455''$, $v_3 = 1.8182''$

(d) $A = 45^{\circ}15'09.64''$, $B = 65^{\circ}15'58.55''$, $C = 69^{\circ}28'51.81''$

(e) Estimated angular misclosure = $\pm 3.3166''$, acceptable misclosure = $\pm 9.6845''$

Question B4

(a) $B = 579.6863$ m, $C = 576.1587$ m

(b)

Route	Adjusted Δ Elevation (m)	v (m)
<i>A to B</i>	12.4543	-0.001667
<i>B to C</i>	-3.5277	-0.001667
<i>C to A</i>	-8.9267	-0.001667

(c) ± 0.0014 m