

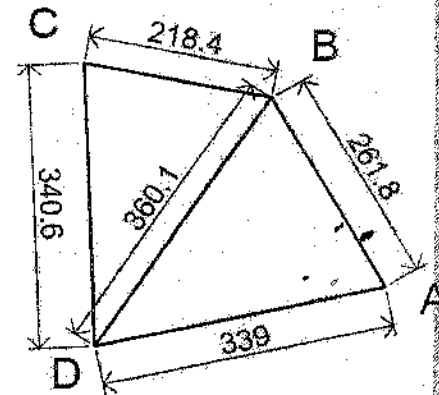


This exam measures the following ILOS: A-13, A-5, B-17, C-13, C-14, D-1, D-2

(Answer by sketch as possible)

Question (1)

- a) To calculate the area of the land shown in figure , the dimension of this land was measured by tape 30 m. the error in this tape is 0.3 too long. The measured lengths were $L_{AB}=261.8\text{m}$, $L_{BC}=218.4\text{m}$, $L_{CD}=340.6\text{m}$, $L_{DA}=339\text{m}$ and $L_{BD}=360.1\text{m}$. The sag in middle of tape is 0.55 m. The mean temperature during measurement was 20 C and the temperature during calibration of tape being 25 C. calculate the true area of this land in Fd,K,S.



(10 Mark)

- b) In ordinary level , the data for profile levels in order taken in the field as follows (points were taken at 50 m intervals): 2.28 , 1.76, 1.18, 2.87, 3.17, 1.19, 3.15, 2.29, 1.38, 2.54, 2.38, 1.98, 2.24, 3.48, 2.94, 1.78, 3.42, 2.38, 1.23, where the underlined readings on staff represent back sight reading . Calculate reduced level for all points if the three, forth and tenth readings are taken by inverted staff, where the collimation level of second setup survey is 128.34 m . Make all necessary checks.

(10 Mark)

Question (2)

- a) The following coordinates were calculated in closed traverse

Stations	X-coordinates	Y-coordinates
A	7200.054	7640.842
B	7204.601	8103.036
C	7369.177	8001.383
D	7356.207	7759.292

Compute the area of traverse by two methods

(10 Mark)

- b) List three types of obstacles, giving an example of each type and how to avoid it (5 Mark)