



Date:31/12/2017

Final Exam

INSTRUCTIONS

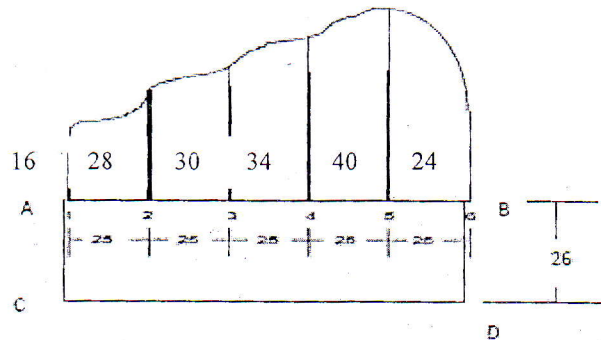
- *Please try all questions. *This is a closed book closed notes exam.
*Any missing data may be reasonably assumed. *Total exam grade: 90 Marks.
*Please answer in the space provided *The Exam in 2. Pages (one faces)

Problem (1)

(20Marks)

A) Prove that : Area of the traverse = $\frac{1}{2} \sum Y_n (X_{n+1} - X_{n-1})$

B) The following figure shows a traverse line AB that passes close to an irregular boundary. Stations A and B lie on the boundary. Offsets, in meter, are taken to the boundary at right angles to AB as shown. Calculate the total area contained between the line CD and the irregular boundary using (i) The trapezoid rule? (ii) The Simpson's rule?



(B) صمم مقياس 1:1000 يقرأ 0.5 قصبة ومثل المسافة 47.5 قصبة على المقياس؟

Problem No.2

(20Marks)

A) State the steps of the temporary adjustment of the automatic level?

B) The following readings in meters were obtained as follows:

First position of level: 3.25&1.82&1.75&3.14(m)

Second position of level: 0.65&1.37&2.05&1.98&0.87(m)

Third position of level: 2.17&1.73&1.68&1.85(m)

Fourth position of level: 1.89&2.76&1.69& 2.89&3.45 (m)

If the reduced level of the 2nd turning point is 36.19 m and the second and fourth reading in fourth position of level were inverted.

I – Enter the readings in a level book (using height of the instrument method)?

II – Calculate the reduced level of the remaining points?

III – Check your computations?

Problem No.3**(25Marks)**

المضلع المغلق ABCDE أختيرت رؤوسه في إتجاه عكس عقارب الساعة وقيست أضلاعه وزواياها الداخلية وكانت قيمها كما هي موضحة في الجدول المرفق. فإذا كان إنحراف الضلع AB $S 26^{\circ} W$ وإحداثيات النقطة A (1000.0 N 1000.0 E) فاحسب الآتي مستخدماً رأس الجدول المرفق لتدوين كافة النتائج المطلوبة :

- 1- الزوايا الداخلية المصححة؟ 2- إنحرافات باقى الأضلاع؟ 3- المركبات (أفقية ورأسية)؟
- 4 - نسبة خطأ القفل؟ 5- المركبات المصححة (أفقية ورأسية)؟ 6 - إحداثيات باقى نقط المضلع؟
- 7- إنحراف وطول الخط BD؟

نقطة	الضلع	طول	زاوية داخلية	نقطة	الضلع	طول	زاوية داخلية
A	CD	398.23	$86^{\circ} 06' 30''$				
B	AB	358.21	$119^{\circ} 25' 20''$	D	DE	321.81	$103^{\circ} 19' 15''$
C	BC	384.73	$120^{\circ} 40' 10''$	E	EA	590.36	$86^{\circ} 06' 30''$
D	CD	398.23	$103^{\circ} 19' 15''$	A			
E	DE	321.81					

يرجى استخدام هذا الجدول لتدوين كافة النتائج المطلوبة في إجابة هذا السؤال.

نقطة	الضلع	الطول	الإنحراف	المركبات من الأرصاد		قيم تصحيح المركبات		المركبات المصححة		الإحداثيات	
				أفقية	رأسية	أفقية	رأسية	أفقية	رأسية	X	Y

Problem No.4**(25Marks)**

A straight section of a proposed road having a formation width of 10 meters is to be constructed on ground. The existing ground levels on the centerline are given in the following table . The reduced level of the formation centerline at chainage 0.0 m is 19.20 m and the centerline of the road is to fall from chainage 0.0 to chainage 600m at a constant gradient of 0.5% .The side slopes are to be 2 in 3 for both cut and fill.

Chainage (m)	00.00	100	200	300	400	500	600
Reduced Level (m)	20.20	19.40	17.50	16.30	17.20	18.00	17.8

Draw the longitudinal section showing the construction line and the cut and fill area?

Calculate the height of cut and fill at the different chainage?

Compute the cross section areas at the different chainage?

Compute the volumes of cut and fill required to form the road between chainage 00.00 m and 600 m?

The End

With best wishes
Prof. Abou El Hassan Rahil