Elmansoura University   Final Exam
Faculty of Engineering   First year Archetecural Eng.
Public Work Department   Time allowed : 180 min.

Answer all question and please illustrate your answer with figure

SURVEYING

First question   (20 % of max.ceredit)

Tacheometry

In a tacheometric survey made with an instrument whose constant is 100, The staff was invertical position

Inst Station	Ht. of inst. Axis(m)	Staff station	Bearing	Vertical angle	Stadia reading
A	1.46	C	44°	$+4^\circ 30'$	1.00,1.382,1.765
		D	104°	$-4^\circ 00$	1.00,1.605,2.210
		E	224°	$+8^\circ 30'$	1.00,1.782,2.425

Calculate the gradient between the staff station C, E and reduced level of each if that at (A) is 38.22 m.

Second question   (20 % of max. credit)

Theory of Errors

1- The diameter (D) of base a Cone is measured as 3.002 ± 0.0005 in. and the height (h) of it 5.54 ± 0.01 in. What are the volume of the Cone and standard error of it ?

2- Two sides and included angle of a trangle were measured with the following results :

$a = 472.58 \pm 0.09$ ft., $b = 214.55 \pm 0.06$ ft.. and $\Theta = 37^\circ \ 15' \pm 30''$

Compute the area of the triangle (in square feet) and the standard error ?

Third question   (40 % of max. credit)

Levelling

The following readings were taken by an engineer for setting out apipe line project.

1.86 -1.94 -1.64- 0.77 – (2.21)- 0.17 – 1.44- (3.71) – 3.10 -2.06 – 3.78 – 0.14 -.0.72 – 2.67- 1.46 – (0.33),- 2.02   -1.77 – 0.43 – (0.06)

If the distance between two sequent point equal 20 m and all readings between pracets were fore sights

<u>First</u> find all reduced levels and check your final results , if the first rading were taken on a Bench mark equal 66.56 m. above sea level

<u>Second</u> Draw the longitudinal section showing all depth of cut if the Pipe was setting on slope 1 ; 200 down (The depth of cut at zero distance is equal 1.80)

Third question   (20 % of max.credit)

a- The magnetic bearing of a line old survey at year 1970 was $70°\ 30'$ and

the declination angle at that time was $3°$ west . What would   be
the true bearing and magneting bearing of this line at year 2010, if the
variation in declination is $15'$ East.

b- The following For bearings were observed in closed compass traverse
ABCDEA :

Line	For bearings	
AB	$54°$	$45'$
BC	$113°$	$00'$
CD	$157°$	$30'$
DE	$241°$	$10'$
EA	$315°$	$15'$

It is required to   :

1- Calculate the interior angles

2- Check the angular misclosure
And compute the corrected angles.