



PROGRAM : BACHELOR OF ENGINEERING TECHNOLOGY

SUBJECT : SURVEYING A1

CODE : SURCIA1

DATE : SEMESTER-MAIN EXAMINATION
3 JUNE 2019
(Second SESSION)

DURATION : (Y-PAPER) 12:00-15:00

WEGHT : 40:60

FULL MARKS : 100

TOTAL MARKS : 100

EXAMINER : MR. A. VESSAL SAPSE NO

MODERATOR : MR. D. WILSON FILE NO

NUMBER OF PAGES : 5 PAGES

INSTRUCTIONS : CALCULATORS ARE PERMITTED (ONLY ONE PER STUDENT)

REQUIREMENTS : GRAPH PAPERS, RULER

Surname and Initial

Student #

INSTRUCTIONS TO STUDENTS:

1. ANSWER ALL QUESTIONS IN PEN NOT IN PENCIL
2. Show all your calculations to get a full mark
3. Return your test sheet with your answer sheet to the examiner

QUESTION 1

A road profile has been surveyed. The design requirement of the road is to build it so that the elevation of Peg D 30 cm below the road elevation (Road is 30cm above Peg D) and Peg E 20cm above the road. Peg D and E are on the ground surface. Our linear closure error in this leveling survey is 10mm. We need to determine the followings:

1. Complete the leveling table and Calculate the Cut and Fill depth) (13)
2. Draw the long section profile Using H- Scale 1:2500, V-scale 1:10 and Datum of 1249.00m A.M.S.L for your drawing. The graph paper is attached. (20)

Pts	BS	IS	FS	R/F	RL	Corr.	Chainage	FH(Final Elev. of Ground)	Change in Grade= req.gradient	Grade Elev	C/F
Peg D	1.70						0	1250.00			
1		1.00					102				
2	2.10		1.70				245				
3	3.10		2.20				329				
4		3.80					478				
Peg E			3.50				589				
$\sum BS=$		$\sum FS=$					$H_d=\Delta H$		slope of Rd		
Check					Corr.		Error		check		
$\sum BS-$	$\sum FS=$		$\sum R-$ $\sum F=$		Corr./pt						

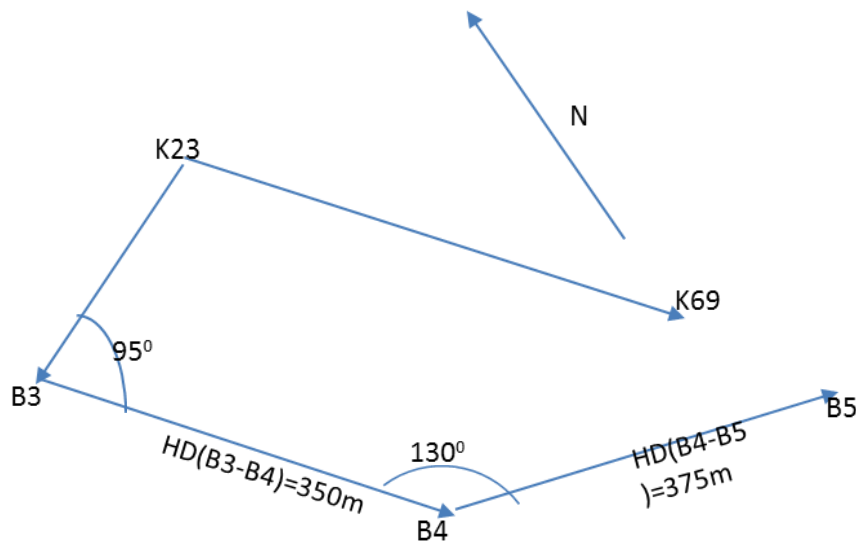
[33]

QUESTION 2

The following figure is an open traverse. The data are shown in the following figure and the table.

1. Calculate Coordinates and elevation of Peg B3 (16) as well as Coordinates of B4 and B5(16).

[32]

**Bearing and Traverse Coordinates calculation sheet + Field Book**

	Coordinates of A and B		Check	
Points	Y	X	Elevation	remarks
K23	88286.32	2852085.6	1349.00m	Peg on the surface
K69	88007.5	2852399.2		
	Horizontal Observation			
set up @ station K23	set 1(CL)	set 2(CR)		
back sight to K69	60.30.00	240.29.50		
Forsight to B3	180.00.00	360.00.00		
Measured angle				
Red.Angle				

Reduced Bearing =	Reduced Bearing			
		BS+CW angle= FS		
Reduced Bearing = BS + Reduced CW ANGLE		BS-FS= ACW angle		
set up @ station K23	Vertical Observation	IH=	1.6	
TH (target height)	height of instrument (IH)	TH=	1.5	
	Set 1(CL)	Set 2(CR)		
to point C	92.00.30	267.59.24		
Reduced VA				
	α =Slope Angle			
	SD=	205m		
HD=		VD=		
	HD=			
	Calc. of Coordinates B			
	$\Delta Y =$			
	$\Delta X =$			
		Y	X	
	Coordinates of K23 =			
	Coordinates of unknown point(B3) =			
Input Elev. Of Station				
IH(Instru.Height)				
T.H.				
VD				
Elev. Of NP(B3)				

QUESTION 3

You are required to do the following for the information in tacheometry table.

1. Determine the coordinates and elevation of the pegs(10)
2. Plot the pegs for grid interval of 25 m using scale of 1:1250 (12)
3. Draw the contours with contour interval of 2 m (13)

[35]**[TOTAL =100]**

PT	HR Obs.	Obs.VA	SD	RD BR	Slope Angle (α)	HD	VD	dY	dX	Y	X	Δ elev.	Elevation
M										13498	65402		1400
R.O.	323.5	87.57								13700	65500		
1	69.2	89.3	95.13										
2	154.4	93.5	48.09										
3	232.5	90.1833	138.19										

TH=1.6m IH = 1.55m

Adjustment= Join Bearing –R.O. HR Observation