PRN:		Course Code :	CET2403

Second Year **B. Tech** End Semester Examination Winter 2024

Engineering Surveying-II 000937

Day and Date: Wed 27 NOV 2024 Max Marks: **100**

Time : 10:30AM To 01:30PM Duration: **03** hrs

Instructions: All questions are compulsory.
Assume suitable data if necessary

		Marks	Bloom's Level	CO
Q.1	**Attempt the following**			
a)	A tachometer was set up at station C which is between and in line of station A and Station B and following reading were obtained on staff held vertically Calculate Grade of line AB. Use constants 100 and 0(Zero)	08	L4	CO1

Inst Station	Staff Station	Vertical angle	Reading	Remark
C	A	- $14^0 37'$	1.665,1.965,2.665	RL of Station A= 600.00 m
C	B	+ $20^0 27'$	0.990, 1.790, 2.990	

b)	Calculate reduce level of the top of the tower from the following data.	08	L4	CO1

Instrument Station	Reading on BM	Vertical Angle
A	1.250	$18^0 18'$
B	2.225	$17^0 29'$

R.L of B.M is 595.360 m and observations were taken with the line of sight horizontal. Distance between AB 135 m point A,B and the top of lower are in the same vertical plane

OR

b)	A tachometer was set up at station C which is between and in line of station A and Station B and following reading were obtained on staff held vertically Calculate Grade of line AB. Use constants 100 and 0(Zero) Upper Cross hair reading were missing	08	L4	CO1

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Inst Station	Staff Station	Vertical angle	Reading	Remark
C	A	- $16^0 24'$	1.550,1.850,X	RL of Station A= 653.80m
C	B	+ $21^0 38'$	0.950, 1.750, X	

Q.2 **Attempt the following**

a) Calculate reduce level of the top of the tower from the following data. 08 L3 CO2

Instrument Station	Reading on BM	Vertical Angle
A	1.555m	24^0
B	2.905 m	18^0

R.L of B.M is 265.390 m and observations were taken with the line of sight horizontal. Distance between AB 150 m point A ,B and the top of lower are in the same vertical plane

b) In trigonometric levelling, calculate the R.L of the top of the tower from the following data. 08 L3 CO2

Inst. Station	Reading on BM	Vertical Angle To top of tower	Remark
A	2.560	$20^0 32'$	RLof BM =450.450
B	3.950	$25^0 41'$	D(AB) = 120 m

OR

b) In order to ascertain the elevation of the top (Q) of the signal on a hill, observations were made from two instrument stations P and R at a horizontal distance 125 m apart, the station P and R being in line with Q. The angles of elevation of Q at P and R were $29^0 47'$ and $18^0 45'$ respectively. The staff readings upon the bench mark of elevation 600.360 were 2.760 and 3.850 when the instrument was at P and at R, the telescope being horizontal. Determine the elevation of the foot of signal if the height of signal above its base is 4.0 meters 08 L3 CO2

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Q.3 **Attempt any two from the following**

a) Explain different types of aerial photographs. 08 L3 CO4

b) Two points A and B having elevations of 795 m and 490 m respectively above datum appear on vertical photograph having focal length of 20 cm and flying altitude of 4530 m above datum. Their corrected photographic coordinate are as follows. Determine the length of the ground line AB 08 L3 CO4

Point	photographic coordinate	
	x (cm)	y(cm)
a	+2.90	+1.55
b	-1.98	+3.95

The scale of an aerial photograph is 1cm= 100 m

c) The photograph size is 30 cm x 25 cm. Determine the number of photographs required to cover an area of 230 sq km if the longitudinal lap is 60% and the side lap is 35 %. 08 L3 CO4

Q.4 **Attempt any two from the following**

a) Explain Criteria for selecting triangulation station 08 L2 CO2

b) Two triangulation stations A and B are 81 km apart and have elevations 242 and 297 m respectively. Find the minimum height of signal required at B so that then line of sight not passes near the ground than 2 meters. The intervening ground may be assumed to have a uniform elevation of 205 meters. 08 L4 CO2

c) From satellite stations S which is 16 m from B to left side. Angles are measured to other triangulations stations are as follow $< CSB = 32^0\ 45'\ 48"$ and $< CSB = 68^0\ 26'\ 36"$ the length of BC and AB are 5678 and 1441 m respectively Find $< ABC$ 08 L4 CO2

Q.5 **Attempt any Two of the following**

a) Explain different components of simple circular curve with neat sketch 09 L3 CO3

b) Find out all necessary data for setting out simple circular curve of radius 140 m. Deflection angle 47^0. Chainage of intersection point 09 L4 CO3

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615 m by ordinate from the long chord method

c)	Find out all necessary data for setting out simple circular curve of radius 130 m. Deflection angle 45^0. Chainage of intersection point 1515 m by Two theodolite method. Assume peg interval 20 m and least of theodolite 20".	09	L4	CO3
Q.6	**Attempt any Two of the following**			
a)	Write Short note on Remote Sensing	09	L3	CO4
b)	Discuss application of GIS and GPS in civil engineering field	09	L3	CO4
c)	Write Short note on Total Station	09	L3	CO4

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