Reg. No.												

Question Paper Code	12083

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Third Semester

Civil Engineering

20CEPC302 - PLANE AND GEODETIC SURVEYING

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Define datum.	*2,K1,CO2*
2.	What is difference between Magnetic Meridian and True Meridian?	*2,K2,CO1*
3.	Mention the temporary Adjustments of theodolite.	*2,K2,CO3*
4.	What is contour interval & horizontal equivalent?	*2,K2,CO3*
5.	Define Reduction to center.	*2,K1,CO4*
6.	What is meant by control surveying?	*2,K1,CO4*
7.	What is meant by satellite constellation?	*2,K1,CO5*
8.	What are the advantages of Total station?	*2,K1,CO5*
9.	Write any two advantages of echo sounding.	*2,K1,CO6*
10.	Classify various types of curves.	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	The following consecutive readings were taken with a dumpy level and 5m leveling staff on continuously sloping ground at a common interval of 15m. 0.415, 1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405m.The first point is having an elevation of 135.275m. Rule out a page of level field book and enter the readings. Calculate the reduced levels of the points by Rise & Fall Method and the gradient of the line joining the first and last point.	*13,K3,CO2*
		OR	
	b)	The following are the magnetic bearings of a closed traverse ABCD carried out in an area under the influence of local attraction. Find the correct magnetic bearings, if the magnetic declination for the area is 5°10'E, find also the true bearings.	*13,K2,CO1*

Line	Magnetic bearing	
	FB	BB
AB	75°05'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°5'
EA	304°50'	125°5'

12. a) (i) Describe characteristics of contour. *6,K2,CO3*
(ii) Explain various methods of contour. *7,K2,CO3*

OR

b) To determine the gradient between two point P and Q a tacheometer was set up at a R station and the following observation where taken keeping the staff held vertical, if the horizontal angle PRQ is 36° 20' determine the avg. Gradient between P and Q Point take K = 100 and C = 0 and RL of HI = 100m. *13,K3,CO3*

Staff station	Vertical angle	Staff Reading
P	+ 4° 40'	1.210, 1.510, 1.810
Q	- 0° 40'	1.000, 1.310, 1.620

13. a) Find the difference in level of the points A and B and the Reduced Level of B from the following data *13,K3,CO4*

Horizontal distance btw A and B = 5625.389 m
Angle of depression from A and B = 1°28'34"
Height of signal of B = 3.886 m
Height of instrument at A = 1.497 m
Co efficient of refraction = 0.07
R sin1" = 30.88 m
RL of A = 1265.85 m

OR

b) The following observations of three angles A, B & C were taken at a station: *13,K3,CO4*

A = 75° 32' 46".3 with weight 3
B = 55° 09' 53".2 with weight 2
C = 108° 09' 28".8 with weight 2
A+B = 130° 42' 41".6 with weight 2
B+C = 163° 19' 22".5 with weight 1
A+B+C = 238° 52' 9".8 with weight 1

Determine the most probable value of each angle using normal equation.

14. a) (i) Explain the features of a total station. *7,K2,CO5*
(ii) Discuss the different sources of errors in a total station. *6,K2,CO5*

OR

b) What are the types of GPS receiver? Explain in detail. *13,K2,CO5*

15. a) A simple circular curve is to have a radius of 573 m. The tangents intersect at a chainage 1060 m and the angle of intersection is 120°.Find *13,K3,CO6*

(i) Tangent Distance,
(ii) Chainage at beginning and end of the curve,
(iii) Length of long chord,
(iv) Degree of curvature,
(v) Number of subchords.

OR

b) Explain the various sounding methods. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Explain in detail about instrument & accessories used for Chaining and Ranging. *15,K2,CO1*

OR

b) (i) What are the basic principles of surveying? Explain them *15,K2,CO1*
(ii) What is the difference between surveyor's compass and prismatic compass?