Reg. No.												

Question Paper Code	12388

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 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.	What are the differences between ranging and chaining?	*2,K1,CO1*
2.	Why do you need bench marks?	*2,K2,CO2*
3.	Why anallactic lens is provided in a tacheometer?	*2,K2,CO3*
4.	List out the characteristics of contours.	*2,K1,CO3*
5.	Define reduction to centre.	*2,K1,CO4*
6.	What is meant by traversing?	*2,K1,CO4*
7.	Distinguish between digital theodolite and EDM.	*2,K2,CO5*
8.	Write about selective availability in GPS.	*2,K2,CO5*
9.	List out the instruments used for sounding.	*2,K1,CO6*
10.	Distinguish between Zenith and Nadir.	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Explain in detail about various classifications of Surveying. *13,K2,CO1*

OR

b) The following bearings were observed in a closed traverse. Find the included angles and correct the bearings of the lines. *13,K2,CO1*

Line	FB	BB
AB	$142^0 45'$	$320^0 15'$
BC	$218^0 45'$	$40^0 15'$
CD	$211^0 45'$	$32^0 15'$
CE	$321^0 45'$	$141^0 15'$
EA	$62^0 45'$	$242^0 15'$

12. a) How do you measure horizontal angles by using the odolite? List out the methods and explain the procedure. *13,K2,CO3*

OR

b) Explain in detail about various methods of contouring with sketches. *13,K2,CO3*

13. a) In measuring angles from a triangulation station B, it was found necessary to set the instrument at a satellite station S, due south of the main station B and at a distance of 12.2 meters from it. The line BS approximately bisects the exterior angle ABC. The angles ASB and *13,K3,CO4*

BSC were observed to be 30^0 20' 30'' and 29^0 45' 6'' respectively. When the station B was observed, the angles CAB and ACB were observed to be 59^0 18' 26'' and 60^0 26' 12'' respectively. The side AC was computed to be 4248.5 meters from the adjacent triangle. Determine the correct value of the angle ABC.

OR

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

A = 75º 32' 46".3	with weight 3
B = 55º 09' 53".2	with weight 2
C = 108º 09' 28".8	with weight 2
A+B = 130º 42' 41".6	with weight 2
B+C = 163º19' 22".5	with weight 1
A+B+C = 238º 52' 9".8	with weight 1

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

14. a) Define total station surveying? Describe its working principle. *13,K2,CO5*

OR

b) (i) What are the space, control and user segments of GPS and their functions? *7,K2,CO5*

(ii) Describe briefly about sources of errors in GPS. *6,K2,CO5*

15. a) Calculate the ordinates at 10 meters distances for a circular curve having a long chord of 80 meters and a versed sine of 4 meters. *13,K3,CO6*

OR

b) Estimate the hour angle and declination of a star from the following data. *13,K3,CO6*

Altitude of the star = $21^0 30'$
Azimuth of the star = 140^0 E
Latitude of the observer = 48^0 N

PART - C (1 × 15 = 15 Marks)

16. a) The following readings were taken with a level and a 4 m staff. Draw up a level book page and reduce the levels by (A) the rise and fall method (B) the height of instrument method. 0.683 B.M (51.362), 1.109, 1.838, 3.399, (3.877 and 0.451) C.P., 1.405, 1.896, 2.676, 3.478, (3.999 and 1.834) C.P., 0.649, 1.706. *15,K3,CO2*

OR

b) The following bearings were observed with a compass. *15,K3,CO2*

Line	**F.B**	**B.B**
AB	80º40'	260º 40'
BC	121º 55'	301º 55'
CD	170º 50'	350º 50'
DE	230º 5'	50º 5'
EA	310º 50'	130º 50'

Determine the interior angles & apply the arithmetic check.