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**Question Paper Code : 90108**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2019

Third Semester

Civil Engineering

CE 8351 : SURVEYING

(Common to Environmental Engineering)

(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Differentiate between true bearing and magnetic bearing.
2. What is meant by balancing of sights ?
3. What is the need for providing anallatic lens ?
4. Define contour interval.
5. What do you mean by reduction to centre ?
6. Find the most probable value and the probable error of the area of a circle whose radius is  $15.40 \pm 0.02$  m.
7. What is celestial sphere ?
8. List the different solutions for a three-point problem.
9. What is a total station ?
10. What is the need for anti-spoofing in GPS ?



## PART - B

(5×13=65 Marks)

11. a) Describe the different equipment required for ranging and chaining and explain the different methods of ranging.

(OR)

- b) Explain the temporary adjustments of a level. How is the reduction of levels and booking of staff readings done using the rise and fall system ?
12. a) A tacheometer is set up at an intermediate point on a traverse course AB and the following observations are taken on a staff held vertically. The instrument is fitted with an anallatic lens and the multiplying constant is 100. The reduced level of A being given as 350.75 m, calculate the length of AB and the reduced level B.

Staff station	Bearing	Vertical angle	Intercept	Axial hair reading
A	40°35'	- 4°24'	2.172	1.962
B	220°35'	- 5°12'	1.986	1.866

(OR)

- b) To determine the elevation of the top of the aerial pole, the following observations were made :

Instrument Station	Reading on BM	Angle of elevation	Remarks
A	1.377	11°53'	RL of BM =
B	1.263	8°5'	30.150 m

Station A and B and the top of the aerial pole are in the same vertical plane. Find the elevation of the top of the aerial pole, if the distance between A and B was 30 m.

13. a) Find the most probable values of the following angles closing the horizontal at a station.

$$P = 45^{\circ}23'37'' \text{ weight} = 1$$

$$Q = 75^{\circ}37'15'' \text{ weight} = 2$$

$$R = 125^{\circ}21'21'' \text{ weight} = 3$$

$$S = 113^{\circ}37'59'' \text{ weight} = 3$$

(OR)



- b) In measuring angles at a triangulation station C, it was found necessary to set the transit over another station P south west of C and 3 m from C, so that the angle APB is approximately bisected by the line PC. The angles APC and CPB were found to be 28°20'35" and 31°26'45" respectively. The side AB was computed to be 975 m in the adjacent triangle, and when the station C was observed, the mean values of the angles CAB and CBA were recorded as 61°30'25" and 58°34'20" respectively. Determine the angle ABC.

14. a) What is meant by soundings ? Describe briefly any four methods of locating soundings.

(OR)

- b) Describe the different types of celestial coordinate systems.

15. a) With neat sketches explain the working of a modern total station.

(OR)

- b) Explain the various components of a GPS and its working principle.

## PART - C

(1×15=15 Marks)

16. a) What are the sources of error in surveying ? Explain the different precautions and correction procedures that can be adopted to eliminate the errors.

(OR)

- b) List the characteristics of contour lines and uses of contouring. Also explain the different methods of locating and interpolating contours.