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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 ?

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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  $28^{\circ}20'35''$  and  $31^{\circ}26'45''$  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  $61^{\circ}30'25''$  and  $58^{\circ}34'20''$  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.
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