7. a. Define and explain the following **7M**
   i) Line of collimation ii) Fore sight
   iii) Horizontal angle iv) Spirit level

   b. The following staff readings were observed successively with a level. The instrument have been moved after 5th and 9th reading. 0.813, 2.170, 2.908, 2.630, 3.133, 3.752, 3.277, 1.899, 2.390, 2.810, 1.542:
   Analyze the R.L of points, if the first reading was taken with a staff held on a bench mark of RL: 39.563m. **8M**

UNIT-IV

8. a. Discuss the various advantages and disadvantages of total station. **7M**

   b. Derive the relation between radius and degree of curve from basics. **8M**

(or)

9. a. Explain the various applications of GPS in Civil engineering. **7M**

   b. Explain the setting out of simple curve by ordinates from long chord method. **8M**

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Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA

SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

II/IV B.Tech. DEGREE EXAMINATION, MARCH, 2021

Third Semester

CIVIL ENGINEERING

17CE3304 SURVEYING AND GEOMATICS

Time: 3hours ***Max. Marks: 70***

Part-A is compulsory

Answer One Question from each Unit of Part-B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1. a. Define surveying.
   b. Outline the fundamental lines of theodolite.
   c. How the capacity of reservoir is estimated?
   d. List the various characteristics of contour.
   e. Explain the importance of GPS in surveying.
   f. Define simple curve and compound curve.
   g. Define well-conditioned triangle.
   h. Identify the sources of errors in theodolite surveying.
   i. Discuss concept of profile leveling.
   j. List elements of simple curve.

PART-B

4 x 15 = 60M

UNIT-I

2. a. Compare direct ranging and indirect ranging methods in detail with sketches. **7M**

   b. A 20 m chain used for a survey was found to be 20.10 m at the beginning and 20.30 m at the end of the work. The area of the plan drawn to a scale of 1 cm = 8 m was measured with the help of a planimeter and was found to be 32.56 cm^2. Find the true area of the field? **8M**

(or)

3. a. Explain the various sources and types of errors in surveying. **7M**

   b. The distance measured between two points on a sloping ground is 450 m. Find the correction to be applied and the horizontal distance if the
   i) angle of slope is 10^0
   ii) slope is 1 in 5
   iii) difference in elevation between two points is 45 m. **8M**

UNIT–II

4. a. Illustrate the various temporary adjustments of theodolite in detail. **7M**

   b. Explain the working principle of a planimeter. **8M**

(or)

5. a. Explain the step by step procedure in method of repetition with a sketch. **7M**

   b. A series of offsets were taken from a chainline to a curved boundary line at intervals of 15m in following order:
   0, 2.65, 3.80, 3.75, 4.65, 3.60, 4.95, 5.85m.
   Find the area by: **8M**
   i) Average ordinate rule
   ii)Trapezoidal rule.

UNIT-III

6. a. Identify advantages and disadvantages of various methods of contouring and describe them in detail. **7M**

   b. The following consecutive readings were observed successively with a level and a 4m staff on continuously sloping ground at a common interval of 30m.
   0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630, 2.545.
   The reduced level of first point was 180.750. Rule out a page of a level book and enter the above readings. Determine the reduced level of points by rise and fall method. And also find the gradient of the line joining the first and last points. **8M**

(or)