20CE3303
UNIT-IV

8. a. What are the considerations and limitations of trapezoidal rule? 7M

   b. The following perpendicular offsets were taken at 10 m intervals from an survey line to an irregular boundary line 3.15, 2.50, 3.50, 5.00, 8.20, 7.60, 3.20, 4.30 m. Calculate the area enclosed between survey lines, the irregular boundary line and first and last offsets by 8M
   i) Trapezoidal rule and
   ii) Simpson's rule.

(or)

9. a. List out the various modern electronic equipment used in surveying? Discuss them in detail. 7M

   b. What is the working principle of total station? Write down the applications of total station. 8M

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VR20 Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA
SIDDHARTHA ENGINEERING COLLEGE
(AUTONOMOUS)

II/IV B.Tech. DEGREE EXAMINATION, March, 2022

Third Semester

CIVIL ENGINEERING

20CE3303 SURVEYING AND GEOMATICS

Time: 3 hours ***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. Differentiate between Plane Surveying & Geodetic Surveying.

   b. State the various types of Surveys based on the instrument used.

   c. Name few level instruments used in levelling.

   d. What is a Contour line?

   e. Define the terms latitude and departure of a survey line. How they are calculated?

   f. What is apex distance?

   g. Write the expression for Simpson's rule.

   h. What is a planimeter?

   i. Write the expression to find out the distance between EDM and the reflector.

   j. Abbreviate the term GPS. Give an application of GPS.

PART-B

4 x 15 = 60M

UNIT-I

2. a. Define surveying. What are the-principles of surveying? Explain-them briefly. **7M**

   b. The length of a survey line when measured with a chain of 20 m nominal length was found to be 841.5 m. When the chain was compared with a standard, it was found to be 0.1 m too long. Find the correct length of the line. **8M**

(or)

3. a. Describe the different types of chains used in survey with its relative advantages. **7M**

   b. A 30 m long steel tape is supported throughout its length under a pull of 10 kg standardized at 20^0 C. A line was measured with this tape under a pull of 15 kg and at a mean temperature of 32^0C and found to be 860 m. Compute the true length of the line if the tape was supported during measurement at every 15 m for the following data. **8M**
   Cross section of the tape = 0.04 cm^2,
   Weight of the tape material = 0.786 kg,
   Modulus of elasticity = 2×10^6 kg/cm^2,
   Coefficient of thermal expansion = 11×10^{-6} /^{0} C.

UNIT-II

4. a. Mention the methods of leveling and explain any two in detail. **7M**

4. b. The following consecutive readings were taken with the help of Dumpy level: 1.810, 2.110, 1.225, 1.455, 0.905, 2.435, 2.810, 2.075 and 1.765. The level was shifted after 4th and 7th reading. The first reading was taken on the staff held on the B.M. of RL 50.0 m. Rule out the page of level book and calculate the R.Ls by "Rise and fall" method. Apply arithmetical check. **8M**

(or)

5. a. Explain direct and indirect methods of contouring. **7M**

   b. Write a short note on **8M**
   i) Contour interval,
   ii) Horizontal equivalent and
   iii) Contour gradient.

UNIT-III

6. a. Draw a neat sketch of a vernier theodolite. Describe its main parts and their functions. **7M**

   b. Explain the repetition method to measure horizontal angles and how readings are recorded. **8M**

(or)

7. a. Describe how to set a circular curve by the method of offsets from the long chord with the help of chain and tape. **9M**

   b. Two tangents intersect at a point B of chainage 25.33 m. The deflection angle being 36^0. Calculate all the data necessary for setting down a simple circular curve with radius of 20 m, by Rankine's method of deflection angles. Consider peg intervals of 2 m; also prepare the setting out table if the theodolite used was having least count 20". **6M**