20CE3303

UNIT-IV

8. a. What is prismoidal correction? Derive an expression for two level section. **(CO4 K2) 7M**

   b. A railway embankment is 10 m wide with side slopes 1 1/2 to 1. Assuming the ground to be level in a direction transverse to the centre line, calculate the volume contained in a length of 140 metres, the centre heights at 20 m intervals being in meters 3.2, 3.9, 4.3, 4.1, 3.9, 3.5, 3.6. **(CO4 K4) 8M**

(or)

9. a. What is working principle of EDM? Discuss about working of planimeter. **(CO5 K2) 8M**

   b. Explain various fundamental parameters associated with Total Station in civil engineering projects. **(CO5 K2) 7M**

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

VELAGAPUDI RAMAKRISHNA

SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

II/IV B.Tech. DEGREE EXAMINATION, JANUARY, 2023

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 plan and map in surveying. **(CO1 K2)**

   b. What are the basic principles of surveying? **(CO1 K1)**

   c. What data is entered in leveling field book? **(CO2 K2)**

   d. What is use of an Auto Level? **(CO2 K2)**

   e. List down any two errors in theodolite surveying. **(CO3 K1)**

   f. What is Designation of a Curve? **(CO3 K2)**

   g. Derive the formula for Trapezoidal rule. **(CO4 K2)**

   h. What is use of Planimeter? **(CO4 K2)**

   i. Classify EDM instruments. **(CO5 K2)**

   j. List any two functions of GPS. **(CO5 K1)**

PART-B

4 x 15 = 60M

UNIT-I

2. a. Explain the classification of surveying based on instrument used. **(CO1 K2) 7M**

   b. A 30 m chain was found to be 20 cm too long after chaining a distance of 2000 m. It was found to be 40 cm too long at the end of day's work after chaining a total distance of 4300 m. Determine the correct distance if the chain was correct before the commencement of work. **(CO1 K3) 8M**

(or)

3. a. Explain different methods of chaining on a sloped ground. Discuss the advantages and disadvantages of each method. **(CO1 K2) 7M**

   b. A line was measured with a steel tape which was exactly 20 m at 30°C and at a pull of 98.1 N, the measured length being 2100.00 m. The temperature during measurement was 35° C and the pull was 130 N. Find the true length of the line if the cross sectional area of the tape was 0.03 cm^2. The coefficient of expansion of the material of the tape per °C = 3.5×10^{-6} and modulus of elasticity of the material of the tape = 2.06×10^5 N/mm^2. **(CO1 K3) 8M**

UNIT-II

4. a. Differentiate between direct and indirect leveling. Describe in brief various methods of direct leveling. **(CO2 K2) 7M**

4. b. During a construction work, the bottom of a R.C chajja A was taken as a temporary B.M (R.L 63.120). The following notes were recorded.
   Reading on inverted staff on B.M. No A 2.232
   Reading on Peg P on ground: 1.034
   Change of Instrument
   Reading on Peg P on ground: 1.328
   Reading on inverted staff on Bottom of Cornice B: 4.124
   Enter the readings in a level book page and calculate the R.L of cornice B. Comment on results. **(CO2 K4) 8M**

(or)

5. a. Discuss with neat sketches about height of instrument, rise and fall method. **(CO2 K2) 8M**

   b. Explain in detail about interpolation and sketching of contours. **(CO2 K2) 7M**

UNIT-III

6. a. Explain with neat pictures how vertical angles are measured using Theodolite. **(CO3 K2) 6M**

   b. What are various types of errors which can occur in theodolite surveying? How would you avoid them? **(CO3 K3) 9M**

(or)

7. a. Explain with a neat sketch various components of theodolite. **(CO3 K2) 8M**

   b. A circular curve has 400 m radius and 50° deflection angle. Calculate i) Length of curve ii) Tangent length iii) Length of long chord iv) Midordinate and v) Apex distance.
   Also find its degree by arc definition and chord definition with standard length 30 m. **(CO3 K4) 7M**