3E1215

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B.Tech. III Sem. (Main) Examination, April/May - 2022
Civil Engg.
3CE4-05 Surveying

Time : 3 Hours **Maximum Marks : 70**

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**. All **five** questions from **Part B** and three questions out of **Five** questions from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As mentioned in form No.205)

PART - A

(word limit 25) **(10×2=20)**

1. Define bearing of a line.
2. In which areas does the compass surveying is not recommended?
3. What is reciprocal levelling?
4. What do you mean by contour?
5. What are the different methods for setting out curves?
6. How a curve may be designated?
7. What is tacheometer?
8. Write down the values of additive and multiplying constants for a tacheometer.
9. What is meant by setting out works?
10. What is a Distomat?

PART - B

(word limit 100) **(5×4=20)**

1. Convert the whole circle bearings of 30°, 112°, 180° and 358° into quadrantal bearings.
2. What are the different uses of contours?
3. Calculate the radius of 2° curve.

4. How would you determine the tacheometric constants?

5. Explain the instruments and methods for laying out buildings.

PART - C

(Any three) **(3×10=30)**

1. ABCD is a traverse. The included angles are measured as $\angle A = 110°$, $\angle B = 54°$, $\angle C = 125°$ and $\angle D = 71°$. Calculate the bearings of the traverse lines with A as origin and AB as arbitrary meridian.

2. The following readings are successively taken from an instrument in a levelling work:

   0.255, 0.385, 0.520, 1.785, 1.895, 2.300, 1.785, 0.335, 0.858, 1.255.

   The position of the instrument was changed after taking 3rd and 6th readings.

   Draw out the form of a level field book and enter the above readings properly. Assume the R.L of the first point as 80.0 m. Calculate the R.Ls of all the points using Rise and fall system and apply usual arithmetic check.

3. Explain the following :

   a. The necessity of transition curve.

   b. No slip condition for a vehicle passing through a curve of radius R.

   Show that no slip condition dictates the minimum radius of the curve.

4. Describe total station with its parts in a neat sketch. What are the major advantages and applications of it.

5. What is photogrammetry surveying? Explain its principle, types, advantages and disadvantages as well as applications.