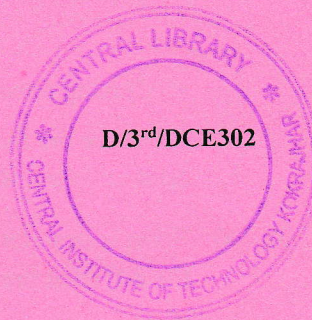


Total number of printed pages:4



2021

## SURVEYING-I

Full Marks: 100

Time: Three hours

The figures in the margin indicate full marks for the questions.

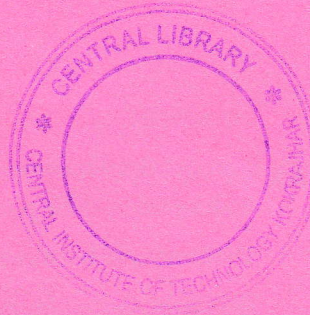
Answer any five questions.

1. a) Differentiate between plane and geodetic surveying. [2+4=6]  
What are the basic principles of surveying?
- b) What is temporary adjustment? Explain the temporary adjustments of a level [6]
- c) Define the following: [4x2=8]
  - i) Contour gradient
  - ii) Contour interval
  - iii) Line of collimation
  - iv) Cadastral survey
2. a) The fore bearings of the lines AB, BC, CD and DA are  $40^{\circ}20'$ ,  $120^{\circ}40'$ ,  $200^{\circ}30'$  and  $285^{\circ}40'$  respectively. Find the interior angles A, B, C and D. [6]
- b) Define the following: [5x2=10]
  - i) Magnetic meridian
  - ii) Local attraction
  - iii) Magnetic bearing
  - iv) Magnetic declination



- v) Closing error
- c) What are the factors on which the choice of proper contour interval depends? [4]
3. a) What is orientation in plane table surveying? Explain the different methods of orientation. [2+4=6]
- b) Define: [5x2=10]
- i) Fly levelling
  - ii) Bench mark
  - iii) Cumulative error
  - iv) Back sight
  - v) Reduced level
- c) Mention any four uses of contour map. [4]
4. a) The following readings were obtained in running fly-levels from a bench mark of R.L. 256.005m. [8]
- 3.210, 1.055, 1.085, 1.800, 2.232, 3.265, 2.068, 2.032, 2.040, 1.780
- The instrument was shifted after 4<sup>th</sup>, 6<sup>th</sup> and 8<sup>th</sup> readings. Enter the readings in a level field book form and reduce the readings by height of instrument method.
- b) Explain the steps followed in temporary adjustments of a plane table survey. [6]
- c) Explain the following methods of plane tabling: [6]
- i) Traversing
  - ii) Radiation
5. a) Define: [5x2=10]
- i) Reciprocal levelling





- ii) Datum
- iii) Compensating error
- iv) Intermediate sight
- v) Whole circle bearing

- b) The following bearings were taken in running a compass traverse [6]

Line	Bearings
AB	$25^{\circ}30'$
BC	$105^{\circ}45'$
CD	$36^{\circ}45'$
DE	$315^{\circ}15'$

At what station do you suspect local attraction? Find the correct bearings of the lines and also compute the included angles.

- c) With a neat diagram explain the working procedure of indirect ranging. [4]
6. a) Define the following: [5x2=10]
- i) Contour gradient
  - ii) Parallax
  - iii) Benchmark
  - iv) Magnetic bearing
  - v) Local attraction
- b) Write down few advantages and disadvantages of plane table surveying. [6]
- c) What is local attraction? How will you eliminate local [4]



attraction?

7. a) List out the accessories used in plane table surveying and mention their purpose of use. [10]
- b) Differentiate between: [5x2]
- i) Whole circle bearing and Quadrantal bearing systems
  - ii) Traverse type and Johnson type plane table.
  - iii) Face left and face right observation in theodolite.
  - iv) Metric chain and engineer's chain
  - v) Backsight and foresight.

