* 4 4 2 7 *

C14–C–**404**

4427

BOARD DIPLOMA EXAMINATION, (C–14)

SEPTEMBER/OCTOBER - 2020

DCE—FOURTH SEMESTER EXAMINATION

SURVEYING—III

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. What is trigonometric levelling? When is it used?

2. State the term 'staff intercept' and list the constants of tacheometry in stadia tacheometry.

3. State the principle of stadia tacheometry.

4. Sketch any three types of horizontal circular curves.

5. Define the terms *(a)* point of tangency, *(b)* long chord and *(c)* normal chord.

6. State the features and use of electronic theodolite.

7. State the importance of GPS receivers.

8. List the types of map projections.

9. Write any three advantages of total station.

10. List any three parts of total station and state their functions.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Enumerate the different cases that occur in trigonometric levelling to find the elevation and distance of a given object.

(b) Derive the formula for finding height and elevation of an object when the base of the object is accessible.

12. Find the elevation of a top of a tower with the data given below :

Instrument at	*Reading on* BM	*Angle of elevation*	*Remarks*
A	0·865	20 30	RL of BM=156·45 m
B	1·225	12 20	Distance *AB* 40 m

Stations *A*, *B* and top of the tower are in same vertical plane.

13. *(a)* Explain briefly two methods of tacheometry.

(b) The following observations are made on a staff held vertical with a tacheometer fitted with an anallatic lens. The constant of the instrument is 100 :

Instr. at	*Height of axis*	*Staff station*	*Vertical angle*	*Hair readings*
O	1·56	*A*	0°0	1·88 2·25 2·62
		B	15°10	1·83 2·15 2·47

RL of station *O* is 130·25. Find the reduced levels of *A* and *B*.

14. A tacheometer was set up at an intermediate station *P* on a line *AB* and the following observations were made on a vertically held staff at *A* and *B* :

Staff at	*Vertical angle*	*Stadia readings*
A	9 30	2·100 2·700 3·300
B	6 20	1·650 1·900 2·150

Compute the horizontal and vertical distances between *A* and *B*. The instrument is fitted with anallatic lens and multiplying constant is 100.

15. Describe how you would set out a circular curve by the method of offsets from the chords produced with the help of chain and tape.

16. Determine the offsets to be set out at 10 m interval along the tangents to locate a 310 m radius curve by using *(a)* radial offsets and *(b)* perpendicular offsets, the length of each chain = 20 m.

17. Explain the procedure for measurement of area with single-station setup using total station.

18. *(a)* State any six applications of GIS in civil engineering.

(b) Write a short note on electronic theodolite.

★ ★ ★