* 4427 *

C14–C–404

4427

BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2016

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. In order to determine the *RL* of top of chimney, the theodolite was set up at a distance of 50 m from its base. The vertical angle measured to the top of the chimney was 25 30 . The back sight taken on a nearby benchmark of *RL* 150·000 m was 2·250 m. Determine *RL* of top of the chimney.

2. What is meant by tacheometry? List the instruments used for tacheometry.

3. State different methods of tacheometry.

4. Draw the neat sketch of simple circular curve and show the components.

5. Define the terms *(a)* back tangent and *(b)* forward tangent.

6. State the principle of photogrammetry.

7. State any three advantages of GPS.

8. List the types of data used in GIS.

9. What is meant by resection? State the types of resection carried out using 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. Determine elevation of top of lighthouse from the following observations :

Instrument at	*Vertical angle*	*Staff reading on BM* (m)	*Remarks*
A	24 40	0·835	RL of BM = 160·000 m
B	16 20	0·950	Distance *AB* 30 m *A*, *B* and top of the lighthouse are in same vertical plane

12. Derive the formula to find the distance and elevation of the object when the base of the object is inaccessible and instrument stating and object are in the same vertical plane.

13. In tangential tacheometry, a target 2·5 m high was held vertically over a station and vertical angles observed to the top and bottom of target. They were 3 26 and 2 24 respectively. If the bottom of the target was 1·75 m above the ground, determine the horizontal distance of the target from the instrument and ground level at the target station. Back sight readings on staff with horizontal sight was 2·560 m on a *BM* of elevation 122·560 m.

14. To determine the gradient between two points *A* and *B*, a tacheometer was set up at another station *C* and the following observations were taken with staff held vertical :

Instrument at	*Staff station*	*Vertical angle*	*Hair readings*
C	A	4 20	1·300, 1·610, 1·920
	B	0 10 40	1·100, 1·410, 1·720

The horizontal angle *ACB* is 35 20 . Determine the gradient between *A* and *B*. *K* 100, *C* 0.

15. Two tangents intersect at a point *B* of chainage 2060 m. The intersection angle being 140°. Calculate *(a)* tangent length, *(b)* curve length, *(c)* length of long chord, *(d)* chainage at point of curve and *(e)* chainage at point of tangency.

16. Two tangents intersect at a point *B* of chainage 1500 m. The deflection angle being 30°. Calculate the data for setting out a simple circular curve of radius 300 m by the method of offsets from chords produced with a peg interval of 30 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. 6

(b) Write a short note on electronic theodolite. 4

★ ★ ★