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BOARD DIPLOMA EXAMINATION, (C–14)

MARCH/APRIL—2017

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. State different cases which come under trigonometric levelling.

2. What is tacheometer survey? State its main purpose.

3. In tacheometer surveying, write the expression for horizontal distance *D*, vertical component *V* when the line of sight is inclined downwards to the horizontal by and the staff is held vertically.

4. Sketch any three types of horizontal circular curves.

5. Establish the relationship between the degree of simple curve and its radius. Take 30 m length of chord.

6. State the features and use of electronic theodolite.

7. List the three segments of GPS. State their functions.

8. State six major application areas of GIS in Civil Engineering.

9. Write a short note on total station.

10. List the steps involved in marking the centre line for a residential building.

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. Write the procedure to find the distance and elevation of an object whose base is inaccessible and the two instrument stations are not in the same vertical plane.

12. In order to determine the elevation of the top of the signal *P* on a hill, the following observations are made from two instrument stations *A* and *B* which are 50 m apart. The top of the signal and stations *A* and *B* are in the same vertical plane. The angle of elevations to the top of the signal from *A* and *B* are 32°40 and 22°30 respectively. The staff readings on the BM from *A* and *B* were 1·515 m and 3·350 m respectively when the instrument was at *A* and *B* the telescope being horizontal. RL of BM is 150·000 m. Determine the elevation of the top of signal *P*.

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

(b) The following observations are made on a staff held vertical with a tacheometer fitted with an anallactic 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 0 is 130·25. Find the reduced levels of *A* and *B*.

14. The following observations were taken with a tacheometer fitted with an anallactic lens, the staff being held vertically. The constant of the tachometer is 100. Calculate the RL of all the staff stations and the distance of *PQ* and *QR*. Height of axis of the instrument at station *Q* was 1·350 m :

Instrument station	*Staff station*	*Vertical angle*	*Hair readings*	*Remarks*
P	*BM*	5°30	1·750, 1·950, 2·150	RL of BM = +500·000 m
	Q	9°30	1·550, 1·650, 1·750	
Q	*R*	12°00	2·070, 2·210, 2·350	

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. Two tangents intersect at point *B* of chainage 1250 m, the angle of intersection being 150°. Calculate all the data necessary for setting out simple circular curve with a radius of 250 m by the method of Rankine's deflection angle. The peg interval is 20 m. Prepare a setting table when the least count of the vernier is 20 . Calculate the data for field checking.

17. *(a)* Explain briefly raster and vector data representation in GIS.

(b) What is stereoscope? State the uses of stereoscope in photogrammetry.

18. Explain the procedure of traversing using total station.

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