



**c20-c-304**

**7227**

**BOARD DIPLOMA EXAMINATION, (C-20)**

**OCTOBER/NOVEMBER—2023**

**DCE – THIRD SEMESTER EXAMINATION**

**SURVEYING—II**

*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. Define latitude and departure of a survey line.
2. Define the technical terms swinging and face left.
3. What are the rules to be followed for balancing a closed traverse?
4. When is trigonometric levelling used in field?
5. Explain the principle of stadia tacheometry.
6. Write the formula to determine the horizontal distance between object and instrument station in stadia tacheometry when line of collimation is horizontal and staff held inclined.
7. List any three types of horizontal curves.
8. Sketch a simple curve and show its elements.
9. Classify the types of GPS receives based on satellite tracking.
10. List any three applications of GIS in civil engineering.

**PART—B**

8×5=40

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- Instructions :** (1) Answer either (a) or (b) from each questions from Part-B  
(2) Each question carries **eight** marks.  
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Explain the method of measuring the vertical angle using theodolite with a legible sketch.

**(OR)**

(b) Explain the traversing with theodolite by included angle method.

12. (a) Find the elevation of the top of A of the signal on a hill from the following data, stations B and C being in line with A :

Inst. Station	Angle of elevation	Sight to	Staff readings on B. M.	Remarks
B	25°42'	A	1.75	RL of BM = +150.28 m
C	18°	A	150	Distance BC = 50 m

**(OR)**

(b) In order to find the height of an electric pole, two vertical angles 5°40 and -10°20' are measured to top and bottom of pole from an instrument station which is at a distance of 60 m measured from base of the pole. Find the height of pole and *RL* of bottom of pole. The *RL* of instrument axis is 100.00 m.

13. (a) Tacheometer was setup at station A and the following readings were obtained on a :

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Instrument at	Staff at	Vertical angle	Stadia readings	Remarks
A	BM	-01°20'00"	2.100, 2.450, 2.80	R.L. of BM = 200.00 m
	B	+05°20'00"	1.450, 2.615, 3.78	

Calculate the horizontal distance between A and B and the *RL* of B, if the constants of the instrument are 100 and 0.30.

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(OR)

(b) A staff was held vertically at a distance of 90 m from an external focusing theodolite and stadia readings taken with the line of sight horizontal were 1.160 m and 2.155 m, if the focal length of the objective glass was 25 cm and its distance from vertical axis was 15 cm. Then calculate (i) stadia interval and (ii) multiplying constant of the theodolite.

14. (a) Determine the offsets to be set out at 15 m interval along the tangents to locate a 600 m radius curve by using (i) radial offsets and (ii) perpendicular offsets. Given, the length of chain is 30 m.

(OR)

(b) A circular curve of 200 m radius is to be set out between two straights having deflection angle  $30^\circ$  right and chainage of the point of intersection as 100 + 10. Calculate the necessary data for setting out the curve by the method of offsets from the chord produced. Take length of one chain as 30 m.

15. (a) Explain the various applications of GPS in civil engineering?

(OR)

(b) Explain the five key components of GIS.

### PART—C

10×1=10

**Instructions :** (1) Answer the following question.  
(2) The question carries **ten** marks.  
(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Prepare a table of Rankine's tangential angles to set out a circular curve of radius 360 m when two straights meet at a chainage 1640 m and the deflection angle is  $24^\circ$  Take peg interval = 20 m.

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