7227

BOARD DIPLOMA EXAMINATION, (C-20)

NOVEMBER/DECEMBER—2022

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.   State the functions of optical plummet and foot screws of a transit theodolite.

2.   Differentiate between telescope normal and telescope inverted.

3.   Define the terms *(a)* centering and *(b)* double sighting.

4.   What is the necessity of trigonometric levelling?

5.   Name the two methods of tacheometry.

6.   Write any three uses of tacheometric surveying.

7.   List three types of horizontal curves.

8.   State the linear methods of curve setting.

9.   Define GPS.

10.   Define map.

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

(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 traversing with theodolite by magnetic bearing method.

(OR)

(b) Find the area of traverse from the following data by independent coordinates method :

Line	Northing	Southing	Easting	Westing
PQ		257	100	
QR	150		225	
RS	175			95
SP		118		208

12. *(a)* Determine the elevation of a top of lighthouse from the following observations. Stations P, Q and top of the lighthouse are in the same vertical plan.

Inst. Station	Vertical Angle	Remarks
P	+26°40'	Staff reading on BM is 0·985 m
Q	+18°20'	Staff reading on BM is 1·325 m, RL of BM = 150·00 m, PQ = 60 m

(OR)

(b) Determine the RL of the top of a tower C from the data given below :

Distance AB = 80 m, Angle BAC = 40°, Angle ABC = 70°, Angle of elevation from A to the top of tower C = 15°, Angle of elevation from B to the top of tower C = 25°, Back sight taken from A on benchmark of RL 100·00 m = 1·850 m, Back sight taken from B = 1·105 m. Stations A, B and tower C are not in same vertical plane.

13. *(a)* A vertical target 2 m long was sighted with a tacheometer, the vertical angles corresponding to its top and bottom being –4°20' and –6°40'. The height of the center of the objective above ground was 1·250 m. The RL of instrument station was 116·250 m. Determine the RL of the bottom of the object.

(OR)

(b) A tacheometer was set up at intermediate station R on the line PQ and the following readings were obtained. The instrument was fitted with an anallatic lens and has a constant of 100. Find the gradient of the line joining stations P and Q. Take RL of station P = 150·00 m.

Staff station	Vertical Angle	Staff Readings (m)		
P	–8°20'	0·925	2·040	3·305
Q	+ 6°40'	1·425	2·260	3·320

14. *(a)* Two tangents intersect at a chainage 1490 m, the intersection angle is 120°. Calculate *(i)* Length of tangent, *(ii)* Length of curve and *(iii)* Length of first chord, the peg interval being 20 m. Take radius of curve as 300 m.

(OR)

(b) Explain the field procedure of setting out simple circular curve by the method of "Successive bisection of chords".

15. *(a)* Write about various applications of GPS in civil engineering.

(OR)

(b) Explain the data types used in 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. Calculate all the necessary data for setting out a circular curve of radius 300 m by the method of offsets from the chord produced, if the two tangents intersect at a chainage of 1190 m and the deflection angle is 36°. Take peg interval of 30 m.

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