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C20-C-304

**7227**

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

**FEBRUARY/MARCH — 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 any three uses of a transit theodolite.
2. Differentiate between transit theodolite and non-transit theodolite.
3. Define the terms telescope normal and transiting
4. State the principle of trigonometric levelling.
5. Differentiate between tachometer and tachometry.
6. What are the constants of a tachometer?
7. Calculate the radius of a 5° curve of 30 m chord length.
8. Define (a) point of tangency and (b) apex distance.
9. Write any three uses of GPS.
10. List the modern surveying techniques.

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## PART—B

8×5=40

- 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 procedure to determine the horizontal angle by reiteration method.

(OR)

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

Line	Latitude (m)	Departure (m)
AB	-116.1	-44.4
BC	6.8	58.2
CD	80.5	17.2
DA	28.8	-31.0

12. (a) Determine elevation of top of a chimney C from the following observations :

Inst. Station	Sight to	Vertical Angle	Remarks
A	C	+24°23'	Staff reading on BM is 1.285 m
B	C	+16°60'	Staff reading on BM is 1.535 m, RL of BM = 101.160 m, PQ = 50 m

(OR)

- (b) In order to know the RL of the top of a tower, the theodolite was setup at a distance of 50 m from its base. The vertical angle measured to the top of the tower was 18°40'. The back sight taken on bench mark of RL 105.525 m was 1.285 m. Determine the RL of the top of tower.

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13. (a) Determine the length and gradient of PQ. Take tacheometric constant is 100 and the instrument is fitted with anallatic lens.

Inst. Station	Staff Station	Bearing	Vertical Angle	Cross Hair Readings (m)
A	P	40°30'	10°30'	1.150, 2.350, 3.550
	Q	70°30'	06°15'	2.250, 2.750, 3.250

(OR)

- (b) In a tangential tacheometry, a target 1.5 m height was held vertically over a station and vertical angles observed to the top and bottom of the target were +4°20' and -8°40' respectively. If the bottom of the target was 1.50 m above the ground, determine the horizontal distance of the target from the instrument and ground level of the target station. Backsight reading on staff with horizontal sight was 1.285 m on a benchmark of elevation 145.550 m.

14. (a) Calculate the perpendicular offsets to be set out at 20 m interval along the tangents to locate a 600 m radius curve. Take deflection angle as 30°.

(OR)

- (b) A circular curve has a radius of 250 m with a deflection angle of 23°. Calculate offsets to the curve using the method of offsets from chord produced. Take chainage at point of intersection of two tangents as 1500 m and peg interval as 30 m.

15. (a) What are the various applications of GPS in civil engineering? Explain any four applications.

(OR)

- (b) Explain various segments of GPS.

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**PART—C**

10×1=10

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

- 16.** In order to set out a simple circular curve for laying a railway line, which method of curve setting is more suitable? Explain its field procedure.

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