



C14-C-304

4228

BOARD DIPLOMA EXAMINATION, (C-14)  
OCT/NOV—2016  
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 levelling. What are different types of level used in levelling? 3
2. Define the following terms : 1½×2=3  
(a) Curvature  
(b) Refraction
3. Define the following terms : 1½×2=3  
(a) Axis of bubble tube  
(b) Axis of telescope
4. State the desired relationship between the fundamental lines of levelling instrument. 3
5. List any three sources of errors in levelling. 3

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6. List any three characteristics of contours. 3
7. Define the terms 'latitude' and 'departure of survey line'. 3
8. What do you understand about closing error? 3
9. Mention the four cases of omitted measurements. 3
10. What is meant by balancing the traverse? 3

**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. The following consecutive readings were taken with a level and 4 m levelling staff on a continuously sloping ground :  
 0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.550, 1.960,  
 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545  
 The RL of first point was 180.750 m. Calculate the reduced levels of the points by rise-and-fall method. 10
12. Explain the procedure of carrying out temporary adjustments of dumpy level. 10
13. The following reciprocal observations were made with a level :

Instruments	Staff readings		Remarks
	A	B	
P	1.210	2.545	Distance between P and Q is 1315 m
Q	0.580	1.985	RL of Q is 532.130 m

- Find the (a) RL of P, (b) combined error for curvature and refraction, and (c) collimation error in the instrument. 10

14. Due to rain, some readings in a field book are erased. Find the missing entries from the remaining readings, find RL's and apply usual checks :

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Station	BS	IS	FS	Rise	Fall	RL	Remarks
1	3.150					103.565	
2		2.245		0.905			
3	3.860		×	1.120			
4		2.125				107.325	
5		×				108.690	
6	×		2.235		1.475		
7		1.935			1.465		
8		3.225			1.290	104.460	
9			×		0.665		
Total	7.480		7.250				

15. (a) Explain with neat sketches the process of reciprocal levelling. 6  
 (b) List any four uses of contour maps. 4
16. (a) State any four parts in a transit theodolite and mention their functions. 4  
 (b) Explain the method of prolonging a straight line with a transit theodolite. 6
17. The following are the corrected latitudes and departures of a closed traverse ABCDA :

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

Assuming the coordinates of station A as (100, 200).

- (a) Calculate the independent coordinates of other stations.  
 (b) Find the area of the traverse. 10

18. Calculate the missing length and bearing of the line  $AB$  from the following theodolite traverse data : 10

<i>Line</i>	<i>Length (in m)</i>	<i>Reduced bearing</i>
$AB$	?	?
$BC$	453.00	N $21^{\circ} 49'$ E
$CD$	529.00	N $80^{\circ} 22'$ W
$DA$	589.00	S $74^{\circ} 20'$ W

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