

2020

RANK Improvement **WORKBOOK**



**Answer key and Hint of
Objective & Conventional Questions**

Civil Engineering
Surveying



MADE EASY
Publications

1

Fundamental Concepts of Surveying and Linear Measurement

LEVEL 1 Objective Questions

1. (b)
2. (c)
3. (b)
4. (c)
5. (d)
6. (c)
7. (d)
8. (b)
9. ($\theta = 4^\circ 15' 45.89''$)
10. (50.043)
11. (b)
12. (c)
13. (b)

LEVEL 2 Objective Questions

14. (7.07)
15. (d)
16. (b)
17. (a)
18. (a)
19. (d)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

20. (b)

21. (a)

22. (b)

LEVEL 3 Conventional Questions

Solution : 1

29.379 m

Solution : 2

29.99 m

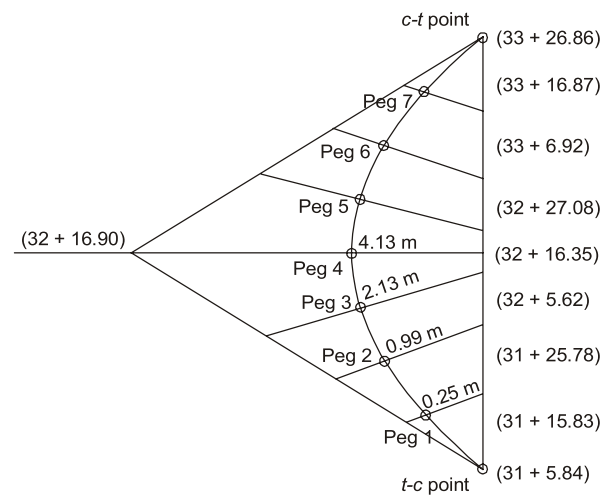
Solution : 3

243881.29 m²

Solution : 4

905.68 m

Solution : 6



■■■■

2

Theodolite, Compass and Traverse Surveying

LEVEL 1 Objective Questions

1. (b)
2. (d)
3. (a)
4. (b)
5. (b)
6. (b)
7. (c)
8. (c)
9. (a)
10. (c)
11. (c)
12. (d)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

LEVEL 2 Objective Questions

13. (b)
14. (a)
15. (b)
16. (c)
17. (b)
18. (c)
19. (b)
20. (c)
21. (283.67)
22. (b)

LEVEL 3 Conventional Questions**Solution : 1**(i) $20^\circ, 2^\circ\text{E}$,

(ii)

Line	FB	BB
<i>PQ</i>	52°	232°
<i>QR</i>	142°	322°
<i>RS</i>	207°	27°
<i>SP</i>	312°	132°

Solution : 2

Line	Magnetic	Bearing	True Bearing	
	<i>FB</i>	<i>BB</i>	<i>FB</i>	<i>BB</i>
<i>PQ</i>	$16^\circ 45'$	$163^\circ 15'$	13°	$159^\circ 30'$
<i>QR</i>	$103^\circ 15'$	$283^\circ 15'$	$99^\circ 30'$	$279^\circ 30'$
<i>RP</i>	$343^\circ 15'$	$163^\circ 15'$	$339^\circ 30'$	$159^\circ 30'$

Solution : 3

29.79 m

Solution : 4

$(\text{WCB})_{BC} = 152^\circ$

$(\text{WCB})_{DE} = 296^\circ$

$(\text{WCB})_{CD} = 224^\circ$

$(\text{WCB})_{EA} = 8^\circ$

$(\text{WCB})_{AC} = 116^\circ$

$(\text{WCB})_{AD} = 152^\circ$

Solution : 5 42952.07 m^2 **Solution : 6**

Length = 187.85 m

Direction of BA = $294^\circ 50'$ **Solution : 7**

$\angle CDE = 96^\circ 45'$

(Length of CD = 180.19 m, Length of DE = 221.76 m)



3

Levelling, Contouring and Plane Table Surveying

LEVEL 1 Objective Questions

1. (b)
2. (a)
3. (d)
4. (d)
5. (b)
6. (a)
7. (1097.87)
8. (a)
9. (c)
10. (b)
11. (b)
12. (a)
13. (d)
14. (b)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

LEVEL 2 Objective Questions

15. (b)
16. (4.56)
17. (3.27)
18. (d)
19. (b)
20. (0.03)
21. (4.455)
22. (0.25°)
23. (d)
24. (c)
25. (b)

LEVEL 3 Conventional Questions**Solution : 1**

- (a) 125.58 m
 (b) 0.069 m
 (c) 0.04152°

Solution : 2

- (a) 28.47 m
 (b) 10.26 km

Solution : 3

- (a) Reduction of levels by rise and fall method:

BS	IS	FS	Rise	Fall	RL	Remarks
1.143					34.223	BM 34.223
	1.765			0.622	33.601	
	2.566			0.801	32.800	
1.390		3.819		1.253	31.547	CP
	1.390			0.872	30.675	
	0.664		1.598		32.273	
3.722		0.433	0.231		32.504	CP
	2.886		0.836		33.340	
	1.618		1.268		34.608	
		0.616	1.002		35.610	TBM 35.290
6.225		4.868	4.935		35.610	Checked
(-)4.868			(-)3.548		(-)34.223	
1.387			1.387	3.548	1.387	

- (b) 35.296 m
 (c) 35.605 m



4

Trigonometric Levelling, Tacheometry Hydrographic Surveying, Curves, Tides, Triangulation

LEVEL 1 Objective Questions

1. (238.12)
2. (b)
3. ($2^{\circ} 52'$)
4. (a)
5. (1)
6. (b)
7. (b)
8. (a)
9. (10.33)
10. (b)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

11. (b)

12. (a)

13. (d)

LEVEL 3 Conventional Questions

Solution : 1

172.60 m

Solution : 2

449.9 m,

Solution : 3

0.385, 0.63, 0.875

Solution : 4

(i) 335.8 m

(ii) $(RL)_C = 457.26 \text{ m}$, $(RL)_D = 457.635 \text{ m}$

(iii) 1 in 895.47

■■■■

LEVEL 1 Objective Questions

1. (d)

2. (a)

3. (a)

4. (c)

5. (d)

6. (c)

7. (a)

8. (b)

9. (b)

10. (c)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

LEVEL 3 Conventional Questions**Solution : 1**

- (a) 1219 m^2
(b) 1230.3 m^2

Solution : 2

$$V = 14683.3 \text{ m}^3$$

Solution : 3

- (i) 601.67 ha-m
(ii) 91.273 m

Solution : 4

$$\text{Area} = 61506.3825 \text{ m}^2$$

■■■■

6

Field Astronomy, Photogrammetric Survey, Remote Sensing & Geology

LEVEL 1 Objective Questions

1. (0.25)

2. (2200)

3. (b)

4. (d)

5. (b)

6. (a)

7. (c)

8. (c)

9. (a)

10. (b)

11. (a)

12. (c)

13. (d)

14. (b)

15. (a)

© Copyright: Subject matter to MADE EASY Publications, New Delhi. No part of this book may be reproduced or utilised in any form without the written permission.

LEVEL 3 Conventional Questions

Solution : 1

$65^\circ 10'$, $45^\circ 30'$

Solution : 2

$110^\circ 57'$

Solution : 3

545 m

Solution : 4

17.5 mm, 857.34 m

Solution : 5

545.16 km

Solution : 6

$H = 4950\text{m}$, $N_1 = 22$, $N_2 = 31$

$N = 682$, Ground distance = 1200 m

Solution : 7

2725 m

Solution : 8

$(\text{Azimuth})_B = 14^\circ 53'$

$(\text{Azimuth})_C = 32^\circ 40'$

Solution : 9

2532.2 m

■■■■