

Part B only

Index Number:



UNIVERSITY OF RUHUNA

FACULTY OF FISHERIES AND MARINE SCIENCES & TECHNOLOGY

Academic Year 2023/2024

Bachelor of Science Honours in Fisheries and Marine Sciences Degree/

Bachelor of Science Honours in Marine and Freshwater Sciences Degree

Level IV Semester I Examinations – April / May 2025

LIM 4171: Surveying and Leveling

Time: 1 hour

(Answer All questions)

Part B (45 min)

1. i. A 20 m chain was found to be 3cm too long after chaining 3400m. It was 6cm too long at the end of the day after chaining a total distance of 5420m. If the chain was correct before the commencement of the work, find the true distance measured at the end of the task. (20 Marks)
- ii. The following table shows the measurements of a chain survey. Calculate the area between the chain line and the irregular boundary. (All readings are left-side offsets to the main line. (30 marks)

Distance (m)	0	5	15	25	30	35	50
Offset (m)	2.5	5	7.5	10	5.5	8	12

2. The following consecutive readings were taken with an auto level and a 4 m levelling staff on a continuously sloping ground at 30 m intervals. The reduced level at the starting point was 80.75 m.
0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530, and 2.250 meters.

- i. Rule out a page of the level book and enter the above readings. (20 Marks)
- ii. Calculate the heights by the collimation method. (10 Marks)
- iii. Apply the arithmetic checks for the leveling work. (10 Marks)
- iv. Determine the gradient of the line joining the first and last point. (10 Marks)

3. The following readings were taken during a traverse survey of a land.

Leg	A to B	B to C	C to D	D to E	E to F	F to G	G to H	H to A
Bearing	23°	55°	89.5°	158.8°	173°	214.5°	264°	327.5°
Distance (m)	70.3	68.9	53.2	40.6	36.1	79.2	82.0	51.8

- i. Draw the plan of this land with a suitable scale. (30 Marks)
- ii. Calculate the area of the land in hectares. (20 Marks)



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