UM-SJTU JOINT INSTITUTE
PHYSICS LABORATORY
DATA SHEET (EXERCISE 5)

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Name: _____   Student ID: _____

Group: 11   Date: 10·17

NOTICE. Please remember to show the data sheet to your instructor before leaving the laboratory. The data sheet will not be accepted if the data are recorded with pencil or modified by correction fluid/tape. If a mistake is made in recording a datum item, cancel the wrong value by drawing a fine line through it, record the correct value legibly, and ask your instructor to confirm the correction. Please remember to take a record of the precision of the instruments used.

You are required to hand in the original data with your lab report, so please keep the data sheet properly.

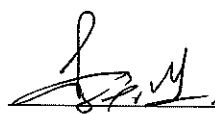
	$T [S] \pm 0.001 [S]$
1	1.556
2	1.556
3	1.556
4	1.556

Table 1. Measurement of the natural frequency.

Damping Selection: 2

Amplitude $[°] \pm 1 [°]$		Amplitude $[°] \pm 1 [°]$		$\ln(\theta_i/\theta_{i+5})$
θ_0	88	θ_5	55	0.470
θ_1	80	θ_6	50	0.470
θ_2	73	θ_7	46	0.462
θ_3	66	θ_8	42	0.452
θ_4	60	θ_9	38	0.457
The average value of $\ln(\theta_i/\theta_{i+5})$				0.462

$10T =$ 15.550 $[S] \pm 0.001 [S]$

Table 2. Measurement of the damping coefficient.

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	T [s] ± 0.001 [s]	φ [°] ± 1 [°]	θ [°] ± 1 [°]
1	1.476 ~~1.77 1.766~~	164	35
2	1.487	162	40.
3	1.501	158	50
4	~~1.508~~ 1.508	~~155~~ 155	~~56~~ 56
5	1.521	149	~~70~~ 72
6	1.529	141	88
7	1.541	125	114
8	1.552	101	133
9	~~1.55~~ 1.553	99	~~138~~ 137
10	1.555	93	137
11	1.558	88	138
12	1.559	84	137
13	~~1.56~~ 1.564	74	130 ~~132 129~~
14	1.571	60	122
15	1.581	48	99
16	~~1.593~~ 1.594	36	76
17	1.606	28	62
18	1.618	23	52
19	1.629	20	45
20	1.643	17	39
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Table 3. θ vs. ω and φ vs. ω characteristics.

	$10T$ [s] $\pm$ 0.001 [s]	φ [°] $\pm$ 1 [°]	θ [°] $\pm$ 1 [°]
1	1.474	164	34
2	1.486	161	40
3	1.501	157	49
4	1.511	152	59
5	1.524	145	76
6	1.533	135	90
7	1.541	123	109
8	1.553	100	128
9	1.556	92	129 (130)
10	1.558	89	130
11	1.560	84	129
12	1.564	74	126
13	1.573	58	112
14	1.583	47	93
15	1.592	38	78
16	1.605	30	63
17	1.619	24	51
18	1.628	21	46
19	1.642	18	37
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Table 4. θ vs. ω and φ vs. ω characteristics.

Instructor's signature: _____