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Answer Form

PART-A

1. Suggest and justify, by using equations, a method allowing to obtain $m \times l$. (2.0 points)

2. Experimentally determine the value of $m \times l$. (2.0 points)

$m \times l =$ ______________________________ .

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PART-B

1. Measure v for various values of h. Plot the data on a graph paper in a form that is suitable to find the value of m. Identify the slow rotation region and the fast rotation region on the graph. (4.0 points)

(On a separate graph paper)

2. Show from your measurements that $h = Cv^2$ in the slow rotation region, and $h = Av^2+B$ in the fast rotation region. (1.0 points)

(In the plot above)

3. Relate the coefficient C to the parameters of the MBB. (1.0 points)

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4. Relate the coefficients *A* and *B* to the parameters of the MBB. (1.0 points)

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5. Determine the value of m from your measurements and the results obtained in ***PART-A***. (3.0 points)

m = ______________________________ .

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PART-C

1. Measure the periods T_1 and T_2 of small oscillation shown in Figs. 3 (1) and (2) and write down their values, respectively. (1.0 points)

T_1 = ______________________________ .

T_2 = ______________________________ .

2. Explain, by using equations, why the angular frequencies ω_1 and ω_2 of small oscillation of the configurations are different. (1.0 points)

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3. Evaluate Δl by eliminating I_o from the previous results. (1.0 points)

$\Delta l =$ ______________________________ .

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4. Write down the value of the effective total spring constant k of the two-spring system. (2.0 points)

$k =$ ____ .

5. Obtain the respective values of k_1 and k_2. Write down their values. (1.0 points)

$k_1 =$ ____ .

$k_2 =$ ____ .