EXPERIMENTAL DATA AND RESULTS

Table 2 Second Moment of Area , I (m^4)

	Semicircle	Quarter Circle	Curved Davit	Angled Davit
I (m^4)				

Table 3 Experimental and Theoretical Results of Semicircle & Quarter circle Deflections

		Semicircle Deflections(mm)				Quarter circle Deflections(mm)			
Weight (g)	Load (N)	ΔH		ΔV		ΔH		ΔV	
0									
100									
200									
300									
400									
500									
600									
700									

Table 4 Experimental and Theoretical Results of Curved Davit & Angled Davit Deflections

		Curved Davit Deflections(mm)				Angled Davit Deflections(mm)			
Mass (g)	Load (N)	ΔH		ΔV		ΔH		ΔV	
0									
100									
200									
300									
400									
500									
600									
700									

For all four experiments data, (semicircle, quarter circle, curved davit and the angled davit), plot graph of ***load versus deflection*** for both horizontal and vertical deflections. Plot both results on one page of graph paper (four graphs are expected for this work). Comparison between the experimental/measured and theoretical values may be made based on these graphs.

DISCUSSIONS (N.B. This part of the report must at least describe or discuss the following in the paragraphs format);

- Interpret and analyze by comparing the theoretical and experimental results. Also explain the overall behaviour of deflections. Comments on the differences by relating it to the main assumptions of the theory.

- Discuss any possible errors arising during the experiment and suggest how those errors can be minimized.

CONCLUSION

Give your conclusion and summary of this experimental work. State whether its main objectives have been achieved or not.

QUESTIONS

1. Based on the experimental results of this laboratory work, explain briefly how the strain energy concept can be used for the structural design work.

2. State briefly the advantages and disadvantages of using the strain energy method compare with the other method (such as double integration method) in determining the deflection of the structure in general.

3. For a simple bar of diameter D, length L and subjected to torque T, calculate the total elastic strain energy stored in this bar. By using the castigliano's theorem, define the angle of twist ϕ (radian) due to torque T. Assume that modulus of rigidity of the bar material is equal to G (N/m^2).