EXPERIMENTAL DATA AND RESULTS

Table 2 Data of load and strain from data logger and strain gauges

Load (kN)	Strain I ($\mu\varepsilon$)	Strain 2 ($\mu\varepsilon$)	Strain 3 ($\mu\varepsilon$)	Strain 4 ($\mu\varepsilon$)	Strain 5 ($\mu\varepsilon$)	Strain 6 ($\mu\varepsilon$)	Strain 7 ($\mu\varepsilon$)
1.0							
2.0							
3.0							
4.0							
5.0							
6.0							

Based on the strain measurement data in Table 2, calculate the experimental and theoretical stresses for each location of strain gauge and complete Table 3.

Table 3 Comparison between experimental and theoretical results, when $P = P_{\max}$

Gauges	Experimental Stress (σ)	Theoretical Stress (σ)	Error (%)
Gauge 1			
Gauge 2			
Gauge 3			
Gauge 4			
Gauge 5			
Gauge 6			
Gauge 7			

1. From the experimental data of Table 2, plot the graph of Load (kN) against Strain ($\mu\varepsilon$) for all gauges.

2. Determine the stress (experimental results) by using equation (7) for all values of applied load P and tabulate the result in Table 3.

3. Determine the stress (theoretical results) by using equation (3) and equation (4) for all values of load P and tabulate these results in Table 3.

4. Determine the percentage of error between the results of experimental and theoretical stresses as shown in the Table 3, when the applied load P is at its maximum value and for the mid-span location (where $x = L/2$ and for strain gauge no. 5).

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

- Interpret and comment the graphical results that you have obtained from this experiment.
- Explain why the values of stresses and strains are different between the experimental and theoretical results.
- State and discuss any factors of errors of this work and give your suggestions how to minimize or overcome those errors.

CONCLUSION

Give your general summary or conclusion and observation of this experimental work. State whether its main objective has been achieved or not?

QUESTION

1. If specimen width (w) and specimen thickness (h) is reduced to half, what is your expected result? Show theoretically how this change may affect the overall results.

2. If the yield strength of the beam is 240 MPa, what will be the maximum allowable load P that may be supported by the beam before initial yield to occur? Make use of equation (6) to determine this load.

3. Determine also the maximum deflection of the beam under the initial yield condition and prove any formula used for this purpose.