

Lab 07

To determine central deflection of a simply supported beam loaded at mid span.

Name: Mohammad Abubakar Atiq

ID: F2022031002

1

Effective length of beam (L):

=

134

cm

1.34

m

52.75593

in

2

Width of beam (w):

=

25

mm

0.025

m

0.984253

in

3

Height of beam (h):

=

7.2

mm

0.0072

m

0.283465

in

4

Area moment of inertia (I): $I = \frac{wh^3}{12}$

=

7.776E-10

m⁴

3.06142E-08

in⁴

5

Modulus of elasticity E:

=

2.006

GPa

Serial No.	Mass (g)	Mass (Kg)	Applied Load (W) N	Experimental Deflection (W)				Theoretical Deflection $\delta_{CT} = \frac{wL^3}{48(EI)}$		
				Loading mm	Unloading mm	Average (W) mm	Average (W) m			
1	100	0.1	0.98	0.47	0.47	0.47	0.00047	3.67501E-14	0.00047	0.00047
2	200	0.2	1.96	0.87	0.89	0.88	0.00088	6.88086E-14	0.00087	0.00089
3	300	0.3	2.94	1.34	1.39	1.365	0.001365	1.06732E-13	0.00134	0.00139
4	400	0.4	3.92	1.79	1.79	1.79	0.00179	1.39963E-13	0.00179	0.00179

Serial No.	Mass (g)	Mass (Kg)	Applied Load (W) N	Experimental Deflection (W)				Theoretical Deflection $\delta_{CT} = \frac{wL^3}{48(EI)}$		
				Loading mm	Unloading mm	Average (W) mm	Average (W) m			
1	100	0.1	2.943	0.6015	0.00116	0.30133	0.00030133	2.35615E-14	0.000602	1.16E-06
2	200	0.2	5.886	0.06219	0.0021	0.032145	0.000032145	2.51347E-15	6.22E-05	2.1E-06
3	300	0.3	8.829	0.00324	0.0033	0.00327	0.00000327	2.55687E-16	3.24E-06	3.3E-06
4	400	0.4	11.772	0.00433	0.0043	0.004315	0.000004315	3.37397E-16	4.33E-06	4.3E-06