KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF ENGINEERING

DEPARTMENT OF MECHANICAL AND CHEMICAL ENGINEERING

ME 396 MECHANICAL ENGINEERING LABORATORY IV.

GROUP P



**A REPORT ON DEFLECTION OF BEAMS AND CANTILEVERS; CIRCULAR BENDING**

***LAB TECHNICIAN:*** Mr. Joseph Amuzu

***LECTURER:*** DR. Y.A.K FIAGBE

**GROUP MEMBERS**

|  |  |
| --- | --- |
| **NAMES** | **INDEX NUMBERS** |
| AGBOADO JOHNNY EDEM | 9366817 |
| EGWIM-NWAGBARA FRANKLIN | 9380017 |
| YAHYA PAUL KWAME | 9379617 |
| FIANNAA CLIFFORD | 9373817 |
| AZIZ NAFIW | 9371117 |
| FAMIYEH EBENEZER | 9373717 |
| ASANTE-FOSU MAAME AFIA | 9370317 |
| AZAMETSI-MENSAH JOSHUA | 9371017 |
| AFFUL GABRIEL NANA KOJO AHINSAN | 9366217 |

**SUMMARY**

On the 4th of February, we performed an experiment to determine the effect of end conditions on buckling load. The following below help detail the experiment

Compressive members can be seen in many structures. They can form part of a framework for instance in a roof truss, or they can stand-alone; a water tower support is an example of this.

Unlike a tension member which will generally only fail if the ultimate tensile stress is exceeded, a compressive member can fail in two ways. The first is via rupture due to the direct stress, and the second is by an elastic mode of failure called **Buckling**. Generally, short wide compressive members that tend to fail by the material crushing are called columns. Long thin compressive members that tend to fail by buckling are called struts.

|  |  |  |  |
| --- | --- | --- | --- |
| **Strut number** | **Length**  **(mm)** | **Buckling Load (N)** | **1/L2 (m-2)** |
| 1 | 300 | -93 | 11.1111 |
| 2 | 350 | -101 | 8.1633 |
| 3 | 400 | -60 | 6.2500 |
| 4 | 450 | -66 | 4.9383 |
| 5 | 500 | -47 | 4.0000 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Strut number** | **Length**  **(mm)** | **Buckling Load (N)** | **1/L2 (m-2)** |
| 1 | 280 | -94 | 12.7551 |
| 2 | 330 | -32 | 9.1827 |
| 3 | 380 | -57 | 6.9252 |
| 4 | 430 | -51 | 5.4083 |
| 5 | 480 | -57 | 4.3402 |