##### Timber as a construction material Laboratory

|  |
| --- |
| Learning Outcomes Assessed:  Apply and demonstrate an understanding of a structural material to a physical practical trial (laboratory).  Link to timber as a construction material laboratory: <https://www.youtube.com/watch?v=UkpcU9Z2yJs&feature=emb_logo> |
| **1. Aims and Objectives**  To gain an appreciation of how structural timber is graded for service use and how different strength grades of timber react to in service loading conditions.  **2. Learning Outcome**  On completion of this item of coursework you will be able to: a. Understand how timber is graded and be able to describe the process. b. Appreciate the relationship between load and deflection of a timber beam  **3. Task**  Measurement of load and deflection of a timber beam. Timber is a common building material that is use widely all over the world. All materials deflect when loaded and timber is no different – but how much a beam deflects is critical to how it will perform in service.  **4. Objective**  The objective of this test is to compare two different strength graded timber beams and critically compare the results.  **5. Procedure**  i. Timber beam prepared and cut to length with hand saw. Length 1200 mm  ii. Timber beam set in small hydraulic test rig.  iii. Deflection measurement device arranged.  iv. Ensured hydraulic valves are in correct position as advised by member of staff.  v. Load applied to beam with pump – this is done gradually; one stroke of the pump at a time  vi. With each stroke of the pump the load and deflection are measured and the readings were recorded.  vii. Loading was continued on the beam until it failed - not when the first signs of failure occur.  viii. The results are then plotted on to a graph – load vs deflection  ix. Include the graph with the report  **6. Conclusion questions Please consider and answer the following questions: -**  1. Which timber tested achieved the maximum load during the test?  2. Why? Briefly explain the reasons why you think one beam was stronger than the other.  3. Were the results from the test in line with your expectations?  4. Did the timber beams obey Hooke’s law (additional reading may be required)?  5. Was the deflection proportional to the load applied?  The word limit for this part is **500 words** and should be written in a report format as explained in the submission procedure. |