UO STRUCTURES 1 - ASSESSMENT

Assessment Name	Assessment – Truss Design Report
Test Available from **Test Due**	
Weighting	**% of the total grade for this course**
File Type to submit	One *.doc* or *.docx* file, with a maximum file size of 100MB

TRUSS ANALYSIS AND DESIGN REPORT TEST COURSE OBJECTIVES:

It is beneficial to familiarise yourself with the relationship between the assessment and the course objectives.

- CO1: acting on structures and determine costs and use this to justify design decisions.
- CO2: support reactions, shear forces, bending moments and deflections.

ASSESSMENT SUMMARY:

COMPONENTS	COURSE OBJECTIVES	WEIGHTING	DUE DATE	DETAILS	SUBMISSION PROCESS
2 Questions	CO 1, 2	%			Online

ASSESSMENT DESCRIPTION

In this test, please apply the relevant concepts covered in this course. In the first question, design different members of a truss. Where relevant, reference the relevant Australian Standard Loading Codes AS1170 and ASI Design Capacity Tables for Structural Steel.

Resources from weeks 1 - 10 will be a valuable reference.

UO Structures 1 Test Instructions

Read this page in detail

- The Test is out of 100 marks and is worth 35% of overall course grade

- Answer All Questions

- All Calculations must be typed, preferably using the Word Equation Editor. Handwritten calculations will not be assessed.

    * Preferably, type the calculations using equation editor in MS Word.

    *Excel spreadsheets and software analysis tools will not be accepted for submission.

- Word document submission only
    o Excel spreadsheets and software analysis tools will not be accepted for submission

- Where relevant, **diagrams must be included** with calculations (e.g. Free body diagrams, tributary areas) and these can be hand drawn and scanned in.
    o Clear and informative diagrams can help the assessor follow your calculations and reasoning.

- For **full marks** for any part of a question, working must be displayed and units must be correct at every step of working.
    o For example, in Question 1 Part A the correct support reactions with no working or free body diagram(s) to show how the support reactions were obtained, will only score 1 out of 10 for that part.

- The marks for each part are **underlined in bold font**

- Answers are to be correct to 2 decimal place.
    o For example, an answer of "The force in member YZ is 125.367 kN (Compression)" can be written as *The force in member YZ is 125.37 kN (Compression)*
    o For example, an answer of "The force in member YZ is 300.00 kN (Compression)" can be written as *The force in member YZ is 300 kN (Compression)*

- The *Design Properties and Capacity Tables* can be found in Course Information section and also in the **Assessment 2** Section on the Course website.

- You will need to access the Australian Standards, especially AS/NZS 1170.1:2002 via Techstreet at the UniSA Library.

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QUESTION 1:

Calculate the axial force in member AB of the king post truss using the method of joints.

QUESTION 2:

Determine the support reactions at points A and E for the given truss loaded at joints.

QUESTION 3:

Using the method of sections, find the force in members CD, DE, and CE of the given roof truss.

QUESTION 4:

Explain the difference between zero-force members and redundant members in a statically determinate truss.

QUESTION 5:

A roof truss is subjected to a uniform distributed load of 5 kN/m. Determine the maximum tension and compression forces in any member.

Parameter Table

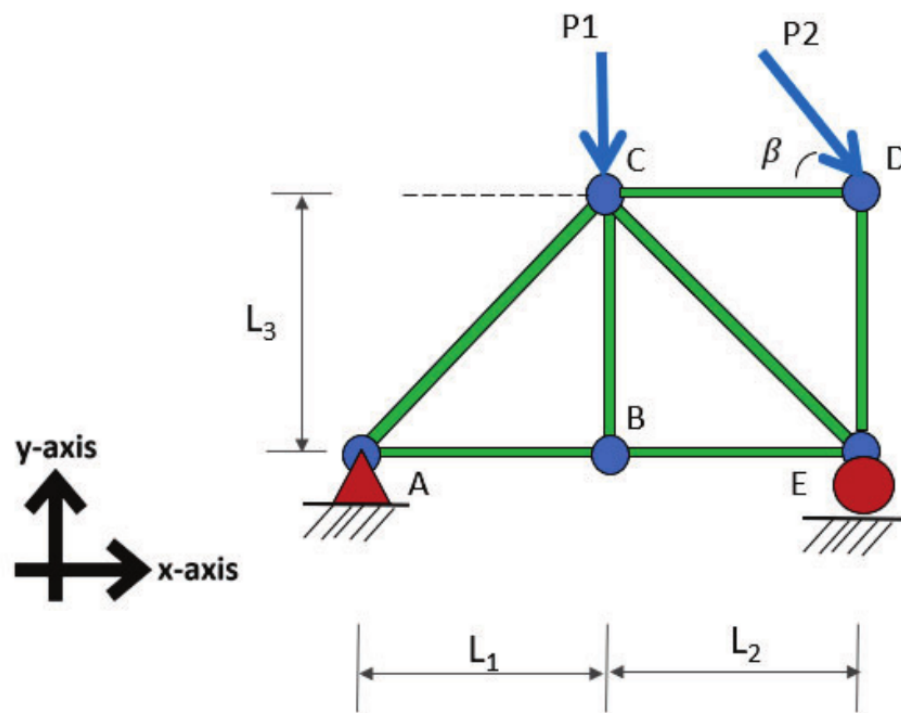| Parameter	Value
Span (m)	12
Height (m)	3
Loan (kN/m)	10
Top Chord Angle (degrees)	30
Material Grade (MPa)	246

Figure 1: Steel Truss with bolted connections