



Försättsblad Prov Original

Kurskod	Provkod	Tentamensdatum
M Ö 0 2 6 G	T 1 0 0	2 0 1 9 - 0 1 - 0 9
Kursnamn	Miljöteknik GR (B), Livscykelanalys (LCA)	
Provnamn	Tentamen	
Ort	Östersund	
Termin		
Ämne		

Course Examination for Life Cycle Assessment

Course name: Life Cycle Assessment,

7,5 ECTS Environmental Engineering BA (B), (MÖ026G)

Date and time: 2018-06-11 (08.00-12.00 SNT)

Coordinator: Henrik Haller

Support: Language dictionary, calculator.

Note: Please answer each question (1, 2, 3 etc.) on a separate sheet of paper.

Before you finally hand in your exam, check that you have numbered all pages and written the number of each questions above your answer. The last question is the most extensive so make sure you allocate enough time for that answer.

Answers are expected to be clear and logical in the argumentation as well as anchored in the course literature and/or lectures given. Calculations should always be presented in such a way that it is possible to follow your logic. It is not necessarily, so that questions only have one correct answer. Grading will be done out from arguments presented and knowledge shown, (based on course literature, lectures, seminars etc.).

Good luck!

Henrik

Maximum score: 40 points. Minimum score to pass: 20 points

- 1. Which are the four main phases of an LCA? Describe these. (4 p)**
- 2. Describe some aspects of material flows of:**
 - 1.) carbon and**
 - 2.) aluminium.****Discuss their current environmental impact and how this impact can be decreased. (5 p)**
- 3. What does substitution and dematerialization mean? Explain (2 p)**
- 4. Describe some basic principles of Material Flow Analysis (4 p)**
- 5. Who are the potential users of LCA? Name some potential clients and in what way they may benefit from LCA? (4p)**
- 6. Name some sustainability concerns with linear vs. circular material flows? Give examples that support your answer (3p)**
- 7. Describe what allocation mean and name some different ways to conduct allocation in LCA? (3 p)**
- 8. What SimaPro and how can it be useful for LCA? (2 p)**
- 9. What are some benefits and limitations of the LCA method? (3 p)**

10. LCA Inventory (10p)

A company manufactures two products, A and B, in two separate product lines in a factory. Each year the company produces 15.000 units of A (product weight: 15 kg) during 1.000 hours and 23.000 units of B (product weight 5 kg) during 2.000 hours. Raw material costs for each product A is \$ 50 and for each product B \$ 40. The effect of the machinery used in the production line A is 2.040 kW and 1.200 kW line B. Each year, the company uses 450 m³ of oil for heating (general heating of buildings), buying a total of 4.900 MWh of electricity (for appliances, lighting, etc.), and uses 7.000 m³ of water (mainly for laundry and showers for employees).

How should oil, electricity and water use be reported in a life cycle inventory of product A? *Provide a value (with unit) for each of three resources oil, electricity and water, and present your calculations a clear way.*

