Student name:	
Student number:	

EXAM Advanced Requirements Engineering (ARE)
April 7th, 2010, 18.30-20.30

Instructions (please read carefully):

- *This is a closed book exam – it is not allowed to consult any material – physical or electronic. Be sure to switch mobile phones off and store them in a closed bag.*
- *Use this exam to write the answers on questions. Use the available boxes after each question for your answer. Do not write outside the boxes*
- *Be sure to indicate name and student number on each sheet of paper.*
- *Concise yet complete answers are better than long-winded answers.*
- *You may answer in English on in Dutch.*
- *Grade for this exam is Round (Sum of Points / 10).*
- *Grade for the ARE course is 0.7* this exam + 0.3 * group assignments. On TIS, you will be reported the final grade for the ARE course.*
- *This exam has five pages.*

Success!

Group assignment
Before starting with the exam, please indicate below whether you did your group assignment.

Yes/No	I did my assignment

Question 1 Requirements Engineering (34 points)
a) A distinction can be made between *validation* and *evaluation* of a requirements engineering technique. Discuss the difference between validation and evaluation in the context of requirements engineering techniques (17 points).

> Validation is ...
>
> Evaluation is ...

b) During the execution of a project, it was claimed that graphical techniques, such as the UML, increase a shared understanding of requirements by the stakeholders. Discuss the difference between internal and external validity of this claim (17 points).
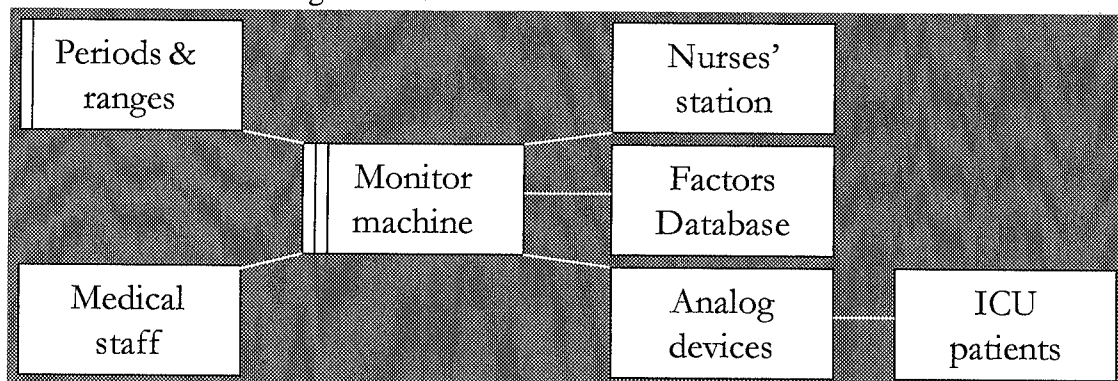
Student name:	
Student number:	

Internal validity:

External validity:

Question 2 Problem Frames (33 points)

Consider the context diagram below

a) The Periods & ranges domain is a designed problem domain whereas the Nurses' station is a given problem domain. Discuss the difference between a designed problem domain and a given problem domain (11 points):

A designed problem domain ....

A given problem domain ...

b) The Factors Database is shown as a given problem domain. However, the Factors Database can also be part of the machine domain (the Monitor machine) and therefore not be part of the context diagram. Argue in which case the Factors Database should be part of the Monitor machine (11 points).

c) Jackson distinguished various kinds of domains, eg. Causal domains and Biddable domains. Explain the difference between a causal domain and a biddable domain and give for each domain an example (11 points).

A causal domain ...

A biddable domain ...

Question 3 Goal Modeling (33 points)

a) Explain how goal oriented requirements engineering techniques can be used for validation of specified requirements. (9 points)

b) Give **four reasons** as to why early phase requirements engineering is important, and briefly explain each reason. (12 points)

c) Explain the different between a **task dependency** and **goal dependency** in a Strategic Dependency model from i*. Use examples if you want. (6 points)

d) Strategic Rational models from $i*$ can be used to reason over various things, amongst other **"ability"**, **"workability"**, **viability"**, and **"believability"**. Explain at least **two** of the aforementioned "-ilities". (6 points)