Work clearly. Read the entire exam before you start. Motivate each answer concisely and to the point. Maximal scores per question are given between parentheses. The maximum total score is 20 points on 11 questions.

1. (2) Motivate software architecture based on the economy of defects.

2. (2) What do the metrics *Coupling* and *Cohesion* mean, and what is their role in architectural design?

3. (1) Explain why the following statement is a misconception: "Usability of a software product is not an architectural concern, because the user interface can be encapsulated in a separate module."

4. (2) Explain the need for *Module Architecture Control*.

5. (1) What architectural aspects affect performance?

6. (2) Present a general and a specific scalability requirement in the form of a *Quality Attribute Scenario*.

7. (2) What is the ATAM? Give three benefits of applying the ATAM, and also two weaknesses.

8. (2) In the context of ATAM, what is a *Utility Tree* and how is it used?

9. (2) Discuss the similarities and differences between a *Component Model* and an architectural design description.

10. (2) Explain at least two benefits of *Component-Based Development* (CBD) over more traditional architectural development approaches. Give two examples of how CBD could negatively affect the quality of the final product.

11. (2) Describe general steps to extract architectural information from a given source code base, and indicate what information can be obtained in that way. Give at least two reasons why such reverse engineering would be interesting.