1. (5 points) Name and briefly describe the five perspectives on quality according to Garvin.

Half point for naming each perspective and half point for describing it correctly

2. (15 points) Consider an automated library circulation system. Every book has a bar code, and every borrower has a card ...

- 7 points if you did the basic correct specification: all the requirements specified with a brief description, inputs, outputs, etc.
- 5 more points if you detailed what the functionality is supposed to do instead of just a simple description (of course it depends on the relevance/correctness of the details) and handling special situations
- 1 point if you assigned the (basic) Data specification
- 1 point if you put the project scope / purpose
- 1 point for something creative

3. (7 points) Explain the difference between errors, faults, and failures. Give an example of an error that leads to a fault in the requirements; the design; the code. Give an example of a fault in the requirements that leads to a failure; a fault in the design that leads to a failure; a fault in the test data that leads to a failure.

- 1 point for the difference between errors, faults, and failures
- 1 point for each of the following:
  - an error that leads to a fault in the requirements
  - an error that leads to a fault in the design
  - an error that leads to a fault in the code
  - a fault in the requirements that leads to a failure
  - a fault in the design that leads to a failure
  - a fault in the test data that leads to a failure

4. (2 points) What do you think happens when requirements validation uncovers an error? Who is involved in correcting it?

1 point for pointing out all the people involved and 1 pointing for describing the process of solving the error

5. (1 point) A manufacturer of a military aircraft lists $2,000,000 as the risk exposure for a jet at a loss probability of 1%. What is the plane’s price?

1 point for the right answer
6. (5 points) Name five of the top ten risk items put forth by Boehm and what he suggested to address them.

Half point for each

7. (5 points) For each type of coupling, give an example of two components coupled in that way.

Half point for the name of the coupling and half pointing for every example

8. (5 points) Using design by contract, write a design for a component that implements a hashtable. Clearly specify the obligations (pre conditions) and consistency constraints (invariants).

1 point for the class invariants
1 point for each method of the class with obligations, etc.