

Software Engineering Qualifying Examination

July 2016

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Part I (60 pts)

1. Suggest why it is important to make a distinction between developing the user requirements and developing the system requirements in the requirements engineering process. (15 pts)

2. When describing a system, explain why you may have to design the system architecture before the requirements specification is complete. (15 pts)

3. The company you work for develops internet applications. To reduce time to market, the company is considering dispensing altogether with integration testing. Instead, the company plans to rely on Beta testing, in which free trial versions of new software will be sent to existing, trusted customers to try out, with the agreement that they will report any problems they encounter. What are the advantages and disadvantages of this approach? (15 pts)

4. Explain why the process of project planning is iterative and why a plan must be continually reviewed during a software project. (15 pts)

Part II (40 pts)

5. What is the cost estimation model of COCOMO I (The Basic COCOMO model)? Explain each of the elements of the COCOMO cost estimation metric. What is the difference between COCOMO I and COCOMO II? (20 pts)

6. You are assigned to work on a project to develop a controller for a new satellite. To save money, your manager estimates you could reuse about 90% of the software from one of two similar satellites the company built in the past. One system has no known bugs, but the code is undocumented and uncommented. The other has 25 known non-critical bugs, but every procedure is documented with a procedural abstraction. Which system would you choose to work with, and why? (20 pts)