

COURSE CODE: ADVANCED SOFTWARE ENGINEERING

MAX. MARKS: 35

COURSE NAME: 10M11CI213

COURSE CREDITS: 3

MAX. TIME: 2 Hrs

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*Note: All questions are compulsory.*

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1. [1 + 2 + 2]
  - a. Rework (or refactoring) each iteration sounds expensive. Isn't it cheaper to design it correctly up front?
  - b. How to adopt an iterative, agile process within an existing waterfall process culture?
  - c. Can iterative and incremental development (IID) be applied on projects or contracts (usually fixed-price) in which we are forced to do major up-front requirements analysis? Justify.
  
2. [2.5 + 2.5 + 2.5]
  - a. Extreme programming expresses user requirements as stories, with each story written on a card. Discuss the advantages and disadvantages of this approach to requirements description.
  - b. Our test environment is very complex and run by another organization. How can we iterate and test?
  - c. How to do documentation for maintenance, when we want to be agile?
  
3. [2.5 + 2.5 + 2.5]
  - a. A colleague who is a very good programmer produces software with a low number of defects but consistently ignores organizational quality standards. How should her managers react to this behavior?
  - b. Assume you work for an organization that develops database products for individuals and small businesses. This organization is interested in quantifying its software development. Suggest appropriate metrics and how these can be collected?
  - c. Explain why tangling and scattering can cause problems when system requirements change.
  
4. [2.5 + 2.5 + 2.5]
  - a. Discuss factors that should be taken into account by engineers during the process of building a release of a large software system.
  - b. Imagine a situation where two developers are simultaneously modifying three different software components. What difficulties might arise when they try to merge the changes that they have made?
  - c. Design a process for assessing and prioritizing process change proposals.
  
5. [2.5 + 2.5 + 2.5]
  - a. Suggest how you could use aspects to simplify the debugging of programs.
  - b. With the help of a diagram explain data life cycle model using the technologies and terminologies of Big Data.
  - c. Using your knowledge of ATM operation, write Z schemas defining the state of the system, card validation (where the user's identifier is checked) and cash withdrawal.