RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

Bachelor of Science in Information Technology
Second Year - Semester I Examination – July / August 2023

ICT 2402 - SOFTWARE ENGINEERING

Time: Three (03) hours

INSTRUCTIONS TO CANDIDATES

- This paper consists of **FIVE (05)** questions on **THREE (03)** pages including this page.
- This is a closed book examination.
- Clearly state the assumptions you make. If you have any doubts regarding the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

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1. a) Briefly describe how software being a Bespoke Software will affect the software cost estimation. (03 marks)

   b) Explain how the APIs will be related to the (when developing a software) **Heterogeneity Challenge**. (03 marks)

   c) Briefly describe how CASE tools help the configurations management. (04 marks)

   d) Briefly describe what **dependability** in software attributes is. (02 marks)

   e) Describe the advantages of using extreme programming instead of waterfall model when used to develop a small web based student management system for a university. (04 marks)

   f) Describe the possible impact of prototyping on the software quality. (04 marks)

2. a) Describe how a "lack of version control" will affect the configurations management. (04 marks)

   b) Briefly describe the reason why iterative development models were introduced. (02 marks)

   c) Describe the management disadvantages of not documenting the software development process activities. (04 marks)

   d) Describe the difference between user requirements and system requirements.(02 marks)

   e) Describe how the managers of the software development company would be using user requirements. (04 marks)

   f) Suggest a way how UML can be used to describe system requirements. (04 marks)

3. a) Describe how the problems with natural language will affect traceability of requirements. (04 marks)

   b) Describe why it is impossible to identify all the requirements correctly at a beginning of a project. (06 marks)

   c) Explain the situations in which **Adaptive maintenance** will be applied. (03 marks)

   d) Describe why the maintenance cost can be reduced with increased team stability. (03 marks)

   e) Describe how program structures degrades over time. (04 marks)

4. a) Explain how OOP helps with the issues that stems from requirements traceability. (03 marks)

   b) Describe why interactive systems are difficult to be developed using pipeline / dataflow models. (03 marks)

   c) Briefly describe the concept known as **Checkpointing** in programming. (02 marks)

   d) Briefly describe what is known as invalid test conditions in a program. (02 marks)

   e) Briefly describe how to avoid **memory leak** in a program. (03 marks)

   f) Explain why we say that the V & V confidence level depends on user expectations. (03 marks)

   g) Describe why integration tests are usually conducted incrementally. (04 marks)

5. a) Briefly describe the advantage of reverse engineering compared to forward engineering with regard to the requirement specification. (02 marks)

   b) Briefly describe the reasons for conducting a source code translation during re-engineering. (02 marks)

   c) Describe how the limited short-term memory of humans will affect the UI design process. (02 marks)

   d) Briefly describe what is known as **system building** in configuration management. (02 marks)

   e) Briefly describe the concept of **pair programming** in Extreme programming. (02 marks)

   f) Briefly describe the concept of **collective ownership** in Extreme programming. (02 marks)

   g) Briefly describe what is known as **derivation history** in configuration management. (02 marks)

   f) Explain the disadvantages of using **lines of code** as a measure of productivity. (02 marks)

   g) Describe why it is difficult to estimate the cost of a software project. (04 marks)

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