



**RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES**

B.Sc. (General) Degree in Information and Communication Technology
Second Year Semester I Examination April/May 2016

ICT 2402 - SOFTWARE ENGINEERING

Time Allowed: 3 hours.

INSTRUCTIONS TO CANDIDATES

- This paper consists of two Sections A and B on **four (04)** pages including this page.
- **Sections A** contains **TWO (02)** questions and answer **ALL** the questions in the **section A**.
- **Section B** contains **FOUR (04)** questions. Answer **ANY THREE (03)** questions from **Section B**.
- This examination accounts for 60% of the course assessment. The total maximum mark attainable is 100. The marks assigned for each question and section, thereof are indicated in square brackets.
- This is a closed book examination.
- Mobile phones or any other communication devices are not permitted.
- 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.

Section A

- 1 (a) Briefly describe the two (02) types of CASE tools. [3 marks]
- (b) Describe what “**Software**” is. [2 marks]
- (c) Describe what “**Cowboy Coding**” is. [4 marks]
- (d) Describe the difference between “**Functional Requirements**” and “**Non-Functional Requirements**”. [4 marks]
- (e) Describe the difference between “**User Requirements**” and “**System Requirements**”. [4 marks]
- (f) Briefly describe what “**Architectural Conflicts**” in System Design are. [3 marks]
- 2 (a) Name three (03) factors on which the programming language selection depends. [3 marks]
- (b) Briefly describe what “**Naming Standards**” are in programming. [3 marks]
- (c) Describe the difference between “**Static Verification**” and “**Dynamic Verification**”. [4 marks]
- (d) Name three (03) “**Management Activities**” in Project Management. [3 marks]
- (e) Name three (03) advantageous of GUIs over Command Line Interfaces. [3 marks]
- (f) Briefly describe two (02) “**Human Factors**” in Interface Design. [4 marks]

Section B

- 3 (a) Assume that you are a project manager working for a software development company. The company has chosen you and your team to do a project which involves in developing a system to handle the blood banks of a country.

The blood bank network of the country is consisted of storage facilities connected main hospitals, a number of collection centers and labs. Currently the record keeping is done manually or local MS Excel based systems. Information which is stored involves donor information, donor histories, inventory of various products, etc.

The new system should digitize record keeping, maintain a central database which is accessible by different locations. The project time period is 12 months.

Currently you have experience with following Software Process Models.

- Waterfall model
- Spiral Model
- Agile Model
- Cowboy Coding
- Extreme programming

Suggest a suitable Software Process Model to be used in this project. Describe why you are selecting it and rejecting others.

[15 marks]

- (b) Describe the disadvantages of having a single central database for the above system.

[5 marks]

- 4 (a) Describe the “**Domain Requirements Problems**” that may arise when gathering requirements for the project described in 3 (a).

[10 marks]

- (b) The project team which is described in 3 (a) is consisted of 40 people. Describe the importance of using a “**Version Controlling System**” when doing the project.

[10 marks]

- 5 (a) Assume that you are working on a project to develop medical equipment. The system that you are developing needs should be highly accurate and bug-less (100% errors removed).

Describe the coding techniques that you can use in the above project to achieve high quality in code.

[6 marks]

- (b) Describe how you would do “**Verification**” on the above 5 (a) project.

[8 marks]

- (c) Describe how “**Stress Testing**” can be used in the above 5 (a) project.

[6 marks]

- 6 (a) Assume that you are a Project Manager who will handle the above 5 (a) project. Identify **five (05)** risks that may affect the project and identify suitable risk management strategies for each of them.

[10 marks]

- (b) Assume that the maintenance activities for the project described in 5 (a) will be handled by an organization other than the developing organization.

Describe how “**Maintenance Cost Factors**” will affect the maintenance cost.

[10 marks]