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RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. (General) Degree
Second Year Semester II Examination April/May 2016

COM 2401 - SYSTEM ANALYSIS AND DESIGN

Time Allowed: 3 hours.

INSTRUCTIONS TO CANDIDATES

- This paper contains **six (06)** questions on **four (04)** pages.
- Answer **one (01)** question from **Part A** and **All** questions of **Part B**.
- This examination accounts for 50% 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.

Part A

1 (a) Briefly describe what a "**System**" is.

[3 marks]

(b) Briefly describe **three (03)** functions of a **System Analyst**.

[3 marks]

(c) Briefly describe what a **"Virtual Organization"** is.

[2 marks]

(d) Name the **three (03)** management levels in organizations.

[3 marks]

(e) Name **three (03)** problems in using natural language to specify requirements.

[3 marks]

(f) Briefly describe what **"Ethnography"** is.

[2 marks]

(g) Briefly describe the difference between **"Functional Requirements"** and **"Non-Functional Requirements".**

[4 marks]

2 (a) Briefly describe **two (02)** advantageous of **GUIs** .

[4 marks]

(b) Briefly describe **two (02) Software Maintenance Activities.**

[4 marks]

(c) Name **three (03)** Human factors in **UI** design.

[3 marks]

(d) Briefly describe what **"Checkpointing"** is in building fault tolerance software.

[2 marks]

(e) Briefly describe **two (02) Cohesion Levels**.

[3 marks]

(f) Briefly describe what **"Software Project Management"** is.

[2 marks]

(g) Briefly describe what **"Risk Management"** is.

[2 marks]

Part B

3 (a) Assume that you are a student working in an individual software research project. The project duration is two years.

Select the **Software Process Model** that you would use for this project from the list given below. Describe why you are selecting it and rejecting others.

- Component based development
- Waterfall method
- Agile Model
- Cowboy Coding
- Extreme programming

[15 marks]

(b) Discuss the problems that you would face when managing codebase (full source code of the project) of the project.

[5 marks]

4 (a) Discuss the problems that you would face if the project in 3 (a) is a group project.

[2 marks]

(b) Explain the solutions that you would provide to the problems discussed 4 (a).

[8 marks]

(c) Assume that the project which is described in 3 (a) has over 200,000 lines of code once finished. Explain the **quality assurance methods** that you would use to make sure the project is maintainable and error-less.

[10 marks]

5 Assume that you are doing a project to develop a system to handle the blood bank in a district hospital.

This system will be used by the doctors who will view the details, and the computer operators of the blood bank who will update and maintain the records of the inventory. There will be another group of administrators whose job will be to maintain the user accounts.

Currently the record keeping is done manually or using local MS Excel based systems. Information which is stored involves donor information, donor histories, inventory of various products, etc. Each blood item is identified by a serial number and each donor should get a donor ID.

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

(a) Draw **Use Case Diagram** to capture **Actors** and **Uses Cases** of this blood bank system.

[10 marks]

(b) Explain the advantageous of developing this blood bank system as a web based system over developing the blood bank system as a desktop application.

[10 marks]

6 (a) Explain the requirement gathering methods that you would use for the blood bank system which is described in Question 5. Assume that the users of that system are not familiar with software development.

[10 marks]

(c) Considering the **Use Case Diagram** that you drew in 5 (a), draw **Sequence Diagrams** to explain the important use cases.

[10 marks]