



SABARAGAMUWA UNIVERSITY OF SRI LANKA  
FACULTY OF APPLIED SCIENCES

DEPARTMENT OF COMPUTING AND INFORMATION SYSTEMS  
B.Sc. DEGREE PROGRAMME IN SOFTWARE ENGINEERING  
SE 2019/ 2020 SEMESTER I EXAMINATION SEPT/ OCT 2022

**REQUIREMENTS FUNDAMENTALS – SE1103**

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Time allowed Three (03) Hours

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**INSTRUCTIONS TO CANDIDATES:**

This paper consists of 05 questions. Answer ALL questions.

The marks given in brackets are indicative of the weight given to each part of the question.

Write your Index No. clearly in all places where appropriate.

Write clearly in English and use blue or black ink.

Non-programmable calculators are ALLOWED in this examination.

No clarifications will be provided on the given questions.

Strike a line through all unused pages in the answer booklet/sheets.

Cross out all scratch paper and hand in at the time of collection.

P.T.O

- 1) a) I What is meant by Requirements Engineering in Software Engineering? (10 marks)
- II Differentiate the terms Project and Product. (10 marks)
- III Who are stakeholders? Why they are important in Requirement Engineering? (15 marks)  
(Explain with one suitable example)
- b) I Briefly Explain the following and provide one example for each. (20 marks)
1. User Requirements
  2. System Requirements
  3. Functional Requirements
  4. Non-Functional Requirements
- II Why Non-Functional Requirements are more important? Explain with a suitable example. (10 marks)
- III State the **Three (03)** main categories of Non-functional requirements and explain them briefly. (15 marks)
- IV Write one example for the following Non-Functional requirement. (20 marks)
1. Usability Requirements
  2. Performance Requirements
  3. Space Requirements
  4. Reliability Requirements
  5. Legislative Requirements
- 2) a) To be effective, a set of requirements should fulfill the customer's needs as well as should have good character.
- I State **Five (05)** characters that good quality requirement should exhibit and explain briefly. (20 marks)
- II For the following requirements find what is/ are the character(s) missing. (30 marks)
1. REQ1: The system shall use the AWS technique for implementation.
  2. REQ2: The registered Students can enroll in undergraduate and postgraduate courses.
  3. REQ3: All Lecturers will log into the system by providing their username, password, and other relevant information.
  4. REQ4: Each page of the system will load in an acceptable time-frame
  5. REQ5: The system must be user friendly
  6. REQ6: A senior lecturer will log into the system by providing his email only.

P.T.O

1 | Page

- b) I List **Three (03)** Requirements Validation Technique. (15 marks)
- II Discuss **Four (04)** important factors, which are being checked under requirements validation. (20 marks)
- III Justify the below statement with **Three (03)** valid points. (15 marks)
- “Requirements validation is a very important phase in requirement engineering”.
- 3) a) I State the process involved in requirements elicitation and explain them briefly. (20 marks)
- II List **Four (04)** problems that can occur in requirements elicitation and analysis. (10 marks)
- III For the following situation, suggest an elicitation technique and describe why it is appropriate. (20 marks)
1. As a Business Analyst, I need to get an overall understanding of what stakeholders do, How they might interact with the new system, and to help them to find difficulties that they face with current systems.
  2. As we are a startup company we don't have enough budget to collect information and the customers are not willing to show their identity.
  3. The user can't understand to express their requirement and we need to get early feedback once we started the implementation as well.
  4. Although users provide details about requirements still we have some doubts and clarification also we are planning to find some new ideas.
- As we are a well-experienced company we need to collect critical and precise details of requirements.
- b) I Consider the following statement of requirements written in natural language. (30 marks)  
Rewrite the below description using the structured approach.
- The automated food delivery system is the most advanced AI smart food delivery system in the world. The system has a touch screen monitor so the customer can select the order. After a few minutes, the order will be delivered to the customer via a small window with a billing statement. A person can have a 20% discount if they order two items, and a 30% discount for those who order more than five food items otherwise no discount will be added. The system also has a credit card reader so the customer can swipe the card through, then they can enter the amount to be paid.
- II Use tabular specifications to show the action that needs to perform for the above scenario (**Part I**). (20 marks)

P.T.O

2 | Page

- 4) a) I List the steps involved in Requirement Management and explain them briefly. (20 marks)
- II Discuss **Three (03)** advantages of the Traceable requirement. (15 marks)
- III Why Requirement Evolution is inevitable in Requirement Management? Justify your statement with **Four (04)** valid points. (20 marks)
- b) I Briefly explain impact analysis. (15 marks)
- II Give **Three (03)** purposes of having impact analysis in Requirement Engineering. (15 marks)
- III Under the requirement management process Change Control Board (CCB) plays a major role. List **Five (05)** tasks that can be performed through CCB. (15 marks)
- 5) a) I What is Software architecture? Explain with a real-world example. (10 marks)
- II List **Five (05)** benefits of having architecture in requirement engineering (15 marks)
- III Explain the job role of an Architect in requirement engineering. (10 marks)
- IV Explain the twin peak model concept with the aid of a diagram. (20 marks)
- b) Answer the following question carefully after reading the following scenario.

An automated cinema ticket-issuing system sells cinema tickets. Users select their desired movie and input a credit card and a National Identity number. The ticket is issued and their credit card account is charged.

When the user presses the start button, a menu display all movies that can be available on a particular day with time, along with a message to the user to select a movie. Once the movie has been selected, users are requested to input their credit cards. Its validity is checked and the user has then requested to input a National Identity number. When the credit transaction has been validated, the ticket is issued.

- I Discover **Five (05)** ambiguities or omissions in the above statement of requirements for part of ticket-issuing systems. (25 marks)
- II Give **Four (04)** suggestions that you can make to improve the quality of the above statement. (20 marks)