SA NO: -

SLIIT
ACADEMY

Foundation Certificate
in
Information Technology

Final Examination
Semester 2 (2023)
June Intake

System Analysis & Design (FIT204)

Duration: 3 Hours

Instructions to Candidates:

- This is a closed book examination.
- This paper contains 5 questions on 8 pages without the cover page.
- Answer all questions in the paper itself.
- Read all questions before answering.
- The total marks obtainable for this examination is 100.

Question 01 (15 marks)

a) **"Systems produce combinations of products, by-products or services."**

i. ***"Interaction is known as a property of a system."*** Explain the above statement **with an example.** (1 mark)

i. ***"Control element guides the system."*** Explain the statement using **an example.** (2 marks)

ii. State two differences between Physical Systems and Abstract Systems. (2 marks)

b) **"System Analysis & Design is a step by step process for developing high quality information systems."**

i. State three skills required to be a system analyst. (3 marks)

ii. State four reasons that make System Analysis & Design a difficult task. (4 marks)

iii. Explain the role of the Project Managers in the context of System Analysis & Design. (3 marks)

Question 02 (20 marks)

a) **"System Development Life Cycle aims to produce a high quality system"**

Mention the phases in SDLC and state the project deliverables (if any) in each phase. (5 marks)

b) **"The primary challenge of project management is to achieve all of the project goals within the given constraints."**

i. State and briefly explain three characteristics of a project. (3 marks)

ii. In the context of project management, explain how the quality of a project is achieved by utilizing the other constraints of a project. (3 marks)

c) Write two types of Rapid Application Development Methodologies. (2 marks)

d) **"A methodology is a formalized approach to implementing the System Development Life Cycle."**

i. State two advantages of Waterfall Methodology. (2 marks)

ii. State two situations to use Prototyping Methodology. (2 marks)

iii. Mention three advantages of Throw-away Prototyping. (3 marks)

Question 03 (25 marks)

Perform a structured analysis of the scenario given below and answer the questions that follows:

A newly opened private university in Sri Lanka has contracted you as the Systems Analyst to analyze requirements and design their Student Records System. They've given you the following processes as their requirements for the proposed system.

To initially enroll to the university, the student provides their personal details, along with the course code in which they wish to enroll. Then, a unique student ID is issued to the student. The system automatically enrolls the student to the compulsory first-year subjects for the registered course.

When a student wants to enroll in a new subject, the student provides their student ID and the subject code of the subject in which they wish to enroll. The system checks that the subject requested by the student is allowed for the course in which the student has enrolled. If it is successful system prompts successful message. If not, the enrolment request is rejected, and system prompts error message.

A staff member can record mark of students by accessing the system. He/she can selects a subject code and enter the mark for any student for a particular subject and system will saves the marks given. Then, system generates the mark sheet.

To print the transcript of a student, an administrator has to login the system using a user name and password. If the credentials are correct, then system prompts the interface to enter the student ID. Then he/she gives the student ID of the student whose transcript is to be generated. The system will check the student's record and then creates a transcript showing all the subjects in which the student has been enrolled in each year, and the mark for each subject. If the password is incorrect, the system will show an error message.

a. List down all the functional requirements of the above system. (10 marks)

b. List down two non-functional requirements of the above system. (2 marks)

c. Draw the Context Diagram for the above scenario. (13 marks)

Question 4 (25 marks)

a) ***" Requirements engineering is the process of determining user expectations for a new or a modified product."***

i. State the difference between a Functional Requirement and a Non Functional Requirement using an example. (2 marks)

ii. State two different types of questions that can be asked in an interview. Write two features of each type. (4 marks)

iii. Prototyping is a modern way of requirement gathering. State two advantages of using prototyping as a requirement gathering technique. (2 marks)

iv. Write three features of a good questionnaire. (3 marks)

b) During the festive season, Pocoloco Company introduces a discount campaign for the regular customers.

- The customers with a loyalty card who has a bill more than 5000 and includes three or more necessary items, are entitled to a 20% discount.
- Loyal customers, with the bill is above 5000 and didn't include three necessary items, are entitled to a 10% discount.
- If the customer is a loyal customer, with a bill less than or equal to 5000, then he/she is entitled to a 5% discount regardless number of necessary items.
- The discount will not be applicable to the customer who do not have the loyalty card.

i. Draw the decision table for the above scenario. (8 marks)

ii. Draw the simplified(compressed) decision table. (2 marks)

iii. Draw the decision tree for the above scenario. (4 marks)

Question 05 (15 marks)

a) What is the difference between Testing and Debugging? (1 mark)

b) Provide two differences between black box testing and white box testing. (4 marks)

c) What is the difference between Alpha Testing and Beta Testing? (2 marks)

d) State and briefly explain two types of Non functional testings. (2 marks)

e) Assume that you have to choose your birth month in a user interface.

i. Perform Equivalence Class Partitioning. (3 marks)

ii. Perform Boundary Value Analysis. (3 marks)

-------End of the Question Paper------