SLIIT COMPUTING

Foundation Certificate in Information Technology

Final Examination
Term 3 (2018)
June Intake

Systems Analysis and Design (FCIT303)

Duration: 3 Hour(s)

Instructions to Candidates:

- This is a closed book examination.
- This paper contains 5 questions on 4 pages without the cover page.
- Answer all questions on the WORKBOOK provided.
- Read all questions before answering.
- The total marks obtainable for this examination is 100.

Question 01 (10 marks)

a) "A system is any group of interacting, interrelated, or interdependent parts that form a complex and unified whole that has a specific purpose."

i. What is the reason to use systems? (1 mark)

ii. What is the difference between a System and a Collection? (2 marks)

iii. Why boundaries and interfaces are important to the system? (1.5 marks)

b) "An Automated Information System has three basic characteristics"

i. What is an Automated Information System? (1 mark)

ii. What are the three characteristics of an Automated Information System? (1.5 marks)

c) "The Systems Analyst plays a major role in the process of systems analysis and design."

i. Who is a Systems Analyst? (2 marks)

ii. Mention the major responsibility of the Systems Analyst. (1 mark)

Question 02 (10 marks)

a) "Waterfall Methodology is a systematic and sequential approach towards software development."

i. What is a Software Development Methodology? (1 mark)

ii. Write one advantage and disadvantage of Waterfall Development Methodology. (2 marks)

b) "There are many Rapid Application Development methodologies available to facilitate quick delivery of information systems. The prototyping is one example."

i. State two situations where you can apply the prototyping software development methodology. (2 marks)

ii. State the two approaches of prototyping. (1 mark)

iii. Mention two differences between the approaches mentioned in part (ii). (4 marks)

Question 03 (30 marks)

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

SuperMart is a company that has shopping centers throughout the country. Customers can browse the company website and place orders. Only registered customers can place order through this system. To register with the system, a customer should give the customer's name, e-mail address, phone number and password. Then system validate the customer details and generate a unique CustomerID. To place an order, first the customer has to login to the system using the Customer ID and the password. Once the customer has successfully logged in, system prompts the interface to view all the items available for ordering.

Customers can search items using the item category. Then the system displays all the items matching with the category. Customers can order items by clicking on any of the items shown on the web page. Once the customer selects the item, the system displays the description of the item. If the customer wants to purchase the item, he/she needs to enter the quantity, delivery address and continue the order. Then system prompts the total amount to pay and ask the payment method.

If the customer selects payment method as credit card, the system asks the customer to enter the credit card details. The credit card details and transaction details are sent to a secure payment gateway (SPG). The SPG validates the received details and sends a confirmation back to the system. Once the order is completed, the system generates the invoice and send to the customer.

Administration staff must be able to get reports by login to the system. They must provide their UserID and password and login to the system. Then they can get the reports.

The system administrator ensures that the system is available 24x7 and assures the confidentiality of the customers' information.

a) List down all the functional requirements in the above scenario. (12 marks)

b) List down all the non-functional requirements in the above scenario. (3 marks)

c) Draw the context diagram. (15 marks)

Question 04 (30 marks)

a) Requirements engineering is the process of determining user expectations for a new or a modified product. Mention the stages of requirement engineering process. (4 marks)

b) Write down two differences between a Structured Interview and an Unstructured Interview. (4 marks)

c) "Questions should be carefully selected before conducting an interview."

i. State two types of questions that can be used in an interview. (2 marks)

ii. Briefly explain the difference between above stated question types. (2 marks)

d) The ABC company wants to introduce an insurance plan scheme for their employees. The management has decided to offer different membership schemes based on the following conditions.

- Permanent employees with experience greater than or equal to 10 years and earns a salary more than or equal to 50000, they are entitled for the Type A insurance plan.
- If the employee is permanent, have experience greater than or equal to 10 years and earns less than 50000, then he/she is entitled for the Type B insurance plan.
- If the employee is a permanent employee with experience less than 10 years, then he/she is entitled for the Type C insurance plan. (regardless their salary).
- All the temporary employees are entitled for the Type D insurance plan irrespective of their salary and number of years of experience.

i. Draw the decision table for the above scenario. (10 marks)

ii. Draw the decision tree for the above scenario. (8 marks)

Question 5 (20 marks)

a) What is Testing? (2 marks)

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

c) What is Verification and Validation in software testing? (2 marks)

d) What is the main difference between Testing and Debugging? (2 marks)

e) Assume that you have to validate the weight entered by a user. The valid range of the weight is as follows:

40<=weight<=60

i. Perform an Equivalence Partitioning to create all the equivalent classes to validate the weight. (3 marks)

ii. Perform a Boundary Value Analysis for the equivalent classes identified in part (i) above. (3 marks)

f) What is the main objective of Recovery Testing? (2 marks)

g) The aim of Acceptance Testing is to determine whether the system meets its specification. Mention two different types of acceptance testing. (2 marks)

End of Examination Paper