Foundation Certificate

in

Information Technology

Final Examination
Semester 2 (2022)
June Intake

System Analysis & Design (FIT204)

Duration: 3 Hours

Instructions to Candidates:

- ◆ This is a closed book examination.
- ◆ This paper contains 5 questions on 5 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 (15 marks)

a) "System is a set of components that interact with each other accomplish some purpose."

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

    ii. State & briefly explain two components of a system. (2 marks)

    iii. Why is it important to check feedbacks from a system? State two points. (2 marks)

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

    i. State three reasons that make System Analysis & Design a difficult task. (3 marks)

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

    iii. Who is a Stakeholder? State three 3 types of stakeholders. (4 marks)

Question 02 (20 marks)

a) "System Development Life Cycle is an organizational process of developing and maintaining systems."

    i. Mention three activities done in the Support & Maintenance Phase. (3 marks)

    ii. Give one deliverable for each of the following phase in SDLC. (2 marks)

- Planning
- Analysis
- Design
- Implementation

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

    i. State and briefly explain two characteristics of a project. (2 marks)

    ii. State 3 project constraints. (3 marks)

c) "Easy Wear" is a largest online store which sells 1000+ foot wears. The owner of the company is planning to launch an e-commerce website to sell the foot wears online and thereby reach many customers. The owner has hired you & your team to design and develop this website. During the discussion, you noticed that the owner did not have a clear picture of the requirements (what he needs from this system) of the system but he expects the quick delivery of the system. On the other hand, you also have less expertise in developing e-commerce websites.

According to the description given above which software development methodology would you select to develop the website. Give reasons for your answer.   (3 marks)

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

   i.   State two advantage and two disadvantages of Waterfall Methodology.   (2 marks)
   ii. List down 2 characteristics of Rapid Application Development methodologies.
                                                                                   (2 marks)
   iii. State the two approaches of Prototyping.   (1 mark)
   iv. Mention two differences between the approaches mentioned in part (iii).   (2 marks)

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

'Fancy Gifts Online (FGO)' is an online gifts ordering system for customers. Only registered customers can order gifts through this system. To register with the system, customer should give the customer name, e-mail, mobile number and password. Then system validate the customer details and generate a unique CustomerID for the customer.

To order gifts, first customers have to login in to the FGO system using the Customer ID and the password. Once the customer is successfully logged in, system prompts the interface to view all the items available for ordering.

Customers can search gift items using the name or the category. Then the system displays all the items match with the search criteria. Customers can order gifts by clicking on any of the items shown on the web page.

Once the customer selects the item, then system displays the item description for 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 for payment.

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

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 of the above system.   (10 marks)

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

c) Draw the Context Diagram.   (13 marks)

Question 04   (25 marks)

a) Requirement Gathering is an important activity in system analysis.

    i.   Mention three techniques used in gathering requirements.   (3 marks)

    ii.   Mention two techniques which can be used for both requirement elicitation and requirement validation.   (2 marks)

    iii.   Write down two differences between Structured Interview and Unstructured Interview.   (2 marks)

    iv.   What are the two types of questions used in an interview? Briefly explain each of the types.   (4 marks)

b) The 'Fancy Gifts Online (FGO)' store wants to run a discount campaign to attract new customers. The store owner decided to offer different discounts based on the following conditions. If the customer is registered and who is older than 25 years, the total amount of transactions done are greater than Rs.5000, then the customer is entitled to discount of 50%. For registered customers those who are older than 25 years and total amount of transactions are less than Rs.5000 are entitled to get 10% discount. If the customer is a registered customer and the age is under 25 years he/she is entitling to get 25% discount (For this discount the total amount of transactions is not considered). For unregistered customers, no discounts are given. The store introduces a membership scheme for those customers.

    i. Draw the decision table for the above scenario.   (7 marks)

    ii. Draw the simplified(compressed) decision table.   (3 marks)

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

Question 05   (15 marks)

a) What is Testing?   (1 mark)

b) Provide two differences between black box testing and white box testing.   (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 age entered by a user. The valid range of age is as follows:

<div align="center">

25<=age<=40

</div>

    i. Perform an Equivalence Partitioning to create all the equivalent classes to validate the

         age.   (3 marks)

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

                                                                     (3 marks)

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