NATIONAL INSTITUTE OF BUSINESS MANAGEMENT

Diploma in Software Engineering-17.1- DSE-2-4-08

Software Engineering

Time allowed: Three and half hours   6th of October, 2017, 1.00pm-4.30pm

INSTRUCTIONS TO CANDIDATES

- This paper contains 10 questions on 3 pages (2-4).

- The total marks obtainable for this examination is 100.

- Marks for each question are indicated

- This examination accounts 60% for the course assessments.

- This is a closed book examination.

- All calculators are not allowed.

- Answer ALL questions.

ADDITIONAL MATERIALS

- None

01. Precision Tools (Pvt)Ltd sells a line of high quality wood working tools. When customers place orders on the company's web site, the system checks to see if the items are in stocks, issue a status message to the customer, and generates a shipping order to the warehouse if the items are available. When the order is shipped the system is notified and the customer is billed and complete the order. When generating the bill, the company gives 10% discount for those who have registered with the company for more than two years. The system generates daily "Order Status Report" and monthly "Sales" and "Stock Status" reports to the management.

    a) Identify the Systems boundary and draw a context-level Data Flow Diagram

    b) Explode the context level diagram drawn in part (a) to level 0 DFD

  c) Draw a level 1 DFD for any one of the above identified main processes. **(15 Marks)**

02.

    a) Explain the three main objectives of system design.
    b) Name the areas to be considered at the feasibility study.
    c) Explain the terms "primary" and "secondary" data.

(08 Marks)

03.
    a) Definition of software engineering is follows;

      "Software engineering is an <u>engineering discipline</u> that is concerned with <u>all aspects</u> <u>of software production.</u>"

      Explain what is meant by the terms "engineering discipline" and "all aspects of software production."

    b) How can you improve the performance of a data oriented system?
    c) What are the consequences of high coupling? **(08 marks)**

04.
    a) Explain the term Regression Testing and why it is important.
    b) Explain the factors that cause the need for system maintenance.
    c) What is a software development life cycle model? Explain the waterfall model with its advantages and disadvantages. **(10 marks)**

Questions 5, 6 and 7 based on the SRS of the Precision Tools (Pvt)Ltd

05. According to the SRS of the Precision Tools (Pvt)Ltd the system should generate monthly Sales Report by Item for the middle managers. As the business analyst of the project you are required to design the output layout of the Monthly Sales Report. **(04 Marks)**

06. Precision Tools (Pvt)Ltd generates invoices at each sale. Company sells many items in one invoice and the invoice is generated only if the order status is completed. According to the SRS they wanted record invoice details (To whom the invoice is addresses, Date, Items sold, Quantities of each item, Item Total, Sub Total, Tax/Discount amounts, Invoice total) Item details, Registered Customer Details and Shipping Order details. For each Sales order system generates a shipping order which includes items requested in the sale order, Container Capacity, Packing Method, Name and Address of the Customer. System keeps track of the orders as 'Pending', 'Sent to Where House' and 'Complete' Design the data stores to record the above details. **(10 Marks)**

07. Write a pseudo-code to generate the Monthly Sales Report of the Precision Tools (Pvt)Ltd. **(10 Marks)**

08. Model the logic of the case study given below using a decision tree and a decision table

ABC video shop has two types of customers Regular and Temporary. Regular customers who are registered with the company for more than two years receives a discount of Rs 500/= on all orders. For orders between 1000 -5000 Regular customers receives 2% discount and the temporary customers receive 1% discount. For orders more than 5000 all customers receive 5% discount.

(10 Marks)

09.
a) Explain the terms validation and verification.
b) Name and explain the validation techniques that can be best applied to validate the given fields Identity Card Number, Sales Order Date, ISBN, Districts in Sri Lanka, Invoice Total.
c) Find the check digit for the code 24563 **(10 Marks)**

10. Read the requirements given below and draw the following diagrams in UML to design a**Manufacturing Management System**.

Use case diagram	**(5 Marks)**
Class diagram	**(5 Marks)**
Sequence diagram for any selected case	**(5 Marks)**

Functional Requirements

- The worker produces products for selling. The company has employed several workers and each worker has worker id, worker first name, worker surname, join date and mobile number. Each product has product number, product name. One worker can produce any number of products.

- Workers should be registered in the system by entering details of them.

- Products which are produced by worker received by quality assurance officer.

- The worker is able to add and update product details in the system.

- Quality assurance officers check the quality of each product produced by each worker and records the status. Each officer has officer id, first name, surname, join date and mobile number.

- Each worker and quality assurance officer is given a monthly salary by accountant. Each salary is consisting of basic salary, OT hour charge, number of OT hours and cost of living. Accountant has accountant number, first name and surname.