THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
B.SC. DEGREE PROGRAMME 2014/2015
CSU3277: SOFTWARE ENGINEERING - FINAL EXAMINATION

Duration: **Three Hours (3 Hrs.)**

Date: 28th April 2015 **Time: 1.00pm. To 4.00pm.**

Answer **FOUR (04)** Questions **ONLY.**

Question 01

(i) What are the functions performed by a system analyst during the System Development Life Cycle (SDLC)?

(ii) State two (2) different types of System Development Life Cycle (SDLC) and identify the phases of them. Briefly describe one of them.

(iii)
(a) What is Computer-Aided Software Engineering (CASE)?
(b) Why are CASE tools used in organizations?

(iv)
(a) What is the purpose of doing feasibility study and why is it important in system development?
(b) State three (3) aspects of testing feasibility.

(v) "Communication skills are very important for a system analyst". Justify your answer.

Question 02

(i) What is a decision tree?

(ii) The following narrative represents a policy statement of customers doing business with a company.

"If the customer is doing business with more than Rs.100,000/=, he/she will get priority treatment by the company, whereas the customer doing business less than Rs.100,000/= would get normal treatment. Even though a customer has business for more than Rs. 100,000/= if he/she has a bad payment history then no priority treatment is given. However, even with a bad payment history, the customers can obtain priority treatment if they have done business with the company for more than 20 years."

Construct a decision tree for the above scenario.

Question 03

(i) What is the importance of developing a decision table?

(ii) What are the three (3) types of decision tables? Describe them.

(iii)A description about a book sale is given below.

"If the order is from a book store and if order is for 06 copies or more, then a discount of 25% is given. Else (if order is for less than 6 copies) no discount is allowed. Else (if order is from libraries) and order is for 50 copies or more, then discount is 15%. Else if order is for 20 to 49 copies, then discount is 10%. Else if order is for 6 to 19 copies, then discount is 5%. Else (order is for less than 6 copies) no discount is allowed."

Construct a decision table for the above scenario.

Question 04

(i) Differentiate between Data Flow Diagram (DFD) and Context Diagram.

(ii) Briefly explain the following terms.
(a) Data Flow
(b) External Entity
(c) Data Store
(d) Process

(iii)The following case study describes the processes in a college. Use the case study to draw a Context Diagram, followed by a zero level Data Flow Diagram.

A college offers correspondence courses to students. Each course carries on for 30 weeks and is based on a weekly study module and Continuous Assessment Test (CAT). At the end of the course, students sit for a final examination.

The college registrar deals with enquiries and applications, and students applying who have sufficient qualifications are asked to register by completing and submitting an application form.

After approval by the academic director, the application form is returned to the Registrar who creates a student file. The accounts department receives the application form and using information from the student file creates an invoice that is sent to the student. Payments made are registered on the invoice file. The first batch of student, material and tests are issued from the dispatch only to those students who have paid fees (this information is taken from the invoice file).
Continuous assessments are marked by academic staff and the results, together with comments are sent out within a week.

Question 05

(i) What is an Entity Relationship (ER) diagram?

(ii) Explain the following terms.
   (a) Entity
   (b) Entity type
   (c) Attributes
   (d) Relationship

(iii) Develop entity relationship diagrams for the following statements.
   (a) Department has a Manager
   (b) An employee works on many projects
   (c) Department controls projects
   (d) Patient see doctors
   (e) Players participate in games

   Indicate clearly the attributes, primary key(s) and relationships. State clearly any assumption you make.

(iv) Give one (01) example for each of the following data relationship complexities.
   (a) One-to-One (1:1)
   (b) One-to-Many (1:M)
   (c) Many-to-Many (M:N)

   Draw entity relationship diagrams for each of your examples. Be sure to label data entities, relationships and relationship types.

Question 06

(i) There is a set of *problems* which is associated with the software industry. Describe these problems.

(ii) Give three (03) important examples of *qualities* which you would expect from a software product and justify why these qualities are important.

(iii) What are the issues that needed to be considered during the *implementation phase* of a project?

(iv) What possible approaches to data migration might be considered for a Banking System, assuming the bank account details must be available at all times.