

## **BLG411E-SOFTWARE ENGINEERING**

Midterm Exam – 23/11/2004

(Books and notebooks are closed.

FP and COCOMO weights sheet is allowed.)

**Question 1)** A store which sells kitchen utensils wants to keep track of its customers, sales and monthly instalment payments of customers. You are asked to develop the ISMS (Instalment Sale Management Software, "Taksitli Satış Yönetimi Yazılımı"). ISMS should have a menu-driven user interface. A new customer is recorded by entering the followings: Customer name, address, phone, debt limit amount. During a sale, the followings are entered: Date of sale, comments (short description of utensils sold, etc.), sale amount, downpayment amount, debt amount, number of instalments. If a new sale increases the customer's total debt so that his limit is exceeded, ISMS should display a warning message. Based on the number of instalments, instalment records are generated automatically with the followings: Instalment number, instalment amount, due date of payment, actual date of payment (initially empty). By default, instalment records should have equal amounts. For each instalment, a voucher document is printed and signed by the customer. When an instalment payment is made, the actual date of payment is filled; also related debt amount is updated accordingly. The following routine reports are needed: List of delinquent customers (customers who failed to make payment for any monthly instalment on its due date); List of debted customers. The user should be able to query a given customer's all information. Another query should let the user to see the overall total amount of all customer debts.

- a) Using the Function Point approach, estimate the LOC for the project. Assume that the implementation will be in C++ language with a 30 LOC/FP. (20 points)
- b) Use the Intermediate COCOMO model to estimate the effort (PM) and project duration ( $T_{DEV}$ ); and determine how many people have to be employed. (12 points)
- c) Describe the following components of the Structured Analysis Model for this project. (60 points)
  - Data Model (ERD)
  - Process Model (Level 0, Level 1, and Level 2 of DFD/CFD)
  - Behavioural Model (STD)

**Question 2)** Give a list of typical Software Configuration Items that are used in SCM. (8 points)