



Date : 17<sup>th</sup> March 2006

Time: 9.30 – 12.30 hrs

Answer three questions from Part A and all questions in Part B.

**Part A (each question carries 20 marks)**

1. (a) What are the different types of support that can be obtained by using CASE tools in software development projects? (10 marks)  
(b) What are the benefits of using automated design tools? (5 marks)  
(c) What are the problems that arise when using CASE tools? (5 marks)
  
2. Structured software designing methodologies are becoming very popular these days.  
(a). Briefly explain the following terms: (9 marks)
  - (i). Data Dictionary
  - (ii). Data Structures
  - (iii). Structured keys  
(b). What advantages can you obtain by using structured software designing methodologies? (6 marks)  
(c). Explain a few good features you can expect to see in well-designed software. (5 marks)
  
3. (a) Discuss the difference between software verification and software validation and explain why software validation is a difficult process. (8 marks)  
(b) Explain briefly two testing methods in software development. (6 marks)  
(c) What is the importance of documentation in software development? (6 marks)
  
4. Read the given problem and show the solution with the aid of a N\_S chart.

*A file called 'EMPLOYEE' is opened for reading and calculating employee salary. Emp\_code, name, address, gross-sal, epf, loan-deduction, net\_salary are the fields in the file EMPLOYEE. Until End-of-File, all the records are READ sequentially. For each record EPF is calculated as 10% of the gross salary.  
Net salary = gross salary – EPF.*

*After calculating net salary pay-slips are printed for each employee. A report is generated to show the total amount deducted to EPF from all the employees.*

(20 marks)

**Part B (40 marks)**

Consider the following scenario to answer questions given below.

When the *Good Readers* library receives a book from the publisher it is sent to the library registration desk with a delivery note (DN). Order of the delivery note (DN) is validated with the ordered books in the *books order file*. If the matching order is not found, a letter of inquiry will be sent to the publisher. If the matching order is found they prepare a Catalogue Note (CN) and send to the registration department.

The validated DN will be sent to the accounts department which stores DN in it.

The corresponding DN is checked with the invoice receipts of the publisher. If the correspondence is correct, the account department prepares payment according to the instructions given by the publisher. The payment could be made by either credit card or by a cheque but there is a 5% discount given for the payments done by credit card. If payment is to be made by cheque it will be posted to the publisher, otherwise the library can use Internet to pay by credit card. If there is no correspondence the DN is stored in the pending file and the publisher is notified.

(a) Draw data flow diagrams to show your proposed system to automate the given process. (starting from level 0 DFD up to 2<sup>nd</sup> level)

(24 marks)

(b) Describe functional and non functional requirements of the system.

(16 marks)