

S.E. (Information Technology) (I Sem.) EXAMINATION, 2009

PROGRAMMING PARADIGM AND METHODOLOGY

(2003 COURSE)

Time : Three Hours

Maximum Marks : 100

- N.B. :—**
- (i) Answer *three* questions from each Section.
 - (ii) Answers to the two sections should be written in separate answer-books.
 - (iii) Neat diagrams must be drawn wherever necessary.
 - (iv) Figures to the right indicate full marks.
 - (v) Assume suitable data, if necessary.

SECTION I

1. (a) What are the characteristics of good programming language? Explain each in brief. [8]
- (b) Discuss the various programming language paradigms with their computational models. Give the suitable diagrammatic representation of the same. [10]

Or

2. (a) Discuss the various expression notations used by the programming languages to solve the expression. [10]
- (b) Explain the machine level language, assembly level language and high level language with suitable example. In what circumstances does it still make sense to program in machine level and assembly level languages ? [8]

3. (a) Define the following terms related to variables with suitable example :

(i) definition

(ii) declaration

(iii) initialization

(iv) scope.

[8]

(b) Compare and explain early binding and late binding with suitable example.

[8]

Or

4. (a) Explain the following control flow statements with any programming language code :

(i) sequence statement

(ii) selection statement

(iii) loop structure

(iv) iterative statement

(v) nested loop structure.

[10]

(b) What is structured programming ? What is need for structured programming ?

[6]

5. (a) Give an example of programming code that generates the different results for :

(i) Call by Value

(ii) Call by Reference

(iii) Call by Name.

[8]

(b) What are the different static scope rules ? Explain each with suitable example.

[8]

Or

6. (a) What do you mean by recursion in the program ? Give the example of program that can be solved recursively as well as non-recursively. [10]
- (b) What do you mean by procedure activation ? How does the declaration travel from name to value ? [6]

SECTION II

7. (a) What are the different components of the PROLOG program ? [10]
- (b) Write all the data type supported by LISP. [6]

Or

8. (a) Define the following terms in OOPs :
- (i) Object
 - (ii) Class
 - (iii) Method
 - (iv) Message. [8]
- (b) Explain the following terms in C++ :
- (i) Friend function
 - (ii) This pointer
 - (iii) Virtual function
 - (iv) Copy constructor. [8]

9. (a) What is inheritance in object-oriented programming ? Explain the different types of inheritance in C++ ? Give the variable access mechanism used in these types of inheritance ? Explain each of this with supportive C++ code. [10]
- (b) What is operator overloading in C++ ? Give suitable example. [6]

Or

10. (a) Write LISP code for appending string and to find length of string. [8]
- (b) Explain the following preliminary notation used by PROLOG with suitable example :
- (i) Facts
 - (ii) Existential Query
 - (iii) Clauses
 - (iv) Deductions. [8]
11. (a) Explain at least *one* special feature of C, C++, LISP and PROLOG and give the suitable examples of each special feature to explain them. [6]
- (b) What is association list in LISP ? [4]
- (c) Explain the following with respect to C++ :
- (i) primitive data types
 - (ii) user defined data types
 - (iii) storage representation
 - (iv) standard input-output function. [8]

Or

12. (a) Compare functional and logic programming languages with respect to the following issues :
- (i) syntactic structure
 - (ii) semantics
 - (iii) data types. [8]
- (b) How the file handling is different in C++ than C ? [6]
- (c) Does inline functions increase the code size and improve performance ? [4]