1950

B.Sc. (H) Computer Science/IV Sem.   C

Paper 403 : PROGRAMMING PARADIGMS

(Admissions of 2001 to 2010)

Time : 3 *Hours*   *Maximum Marks* : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *All* questions.

Parts of a question must be answered together.

Section A

(Attempt *All* questions.)

1. Differentiate between the following :   3×3=9

    (*a*) Prime and proper programs

    (*b*) Dynamic scope and static scope

    (*c*) Copy based approach and delegation based approach.

P.T.O.

2. Discuss any *two* attributes of a good programming language. 4

3. For the statement :

$$1 = j + 5;$$

explain the various classes of binding time. 5

4. What happens during the following stages of translation : 8

   (1) Lexical analysis

   (2) Syntactic analysis

   (3) Semantic analysis

   (4) Code generation.

5. Discuss to the point different ways of specifying the semantics of a language. 4

6. For the elementary data type float, discuss the following :

   (1) Specification

   (2) Storage representation

   (3) The set of operations defined. 1+2+2=5

Section B

(Attempt any *four*) :

7. (*a*) Explain interactive input output·files.   2

  (*b*) Describe *four* methods to provide the programmer with the ability to create new data types.   4

  (*c*) What are generic subprograms and discuss their implementation   4

8. (*a*) With the help of an example explain the problem of side effects while evaluating an expression.   5

  (*b*) Using an example explain the code segment and activation record of a subprogram.   5

9. (*a*) What are the various operations on data and program elements that require memory management ?   5

  (*b*) (*i*) Explain how ML allows users to define exceptions.

  (*ii*) Describe the following LISP list functions with the help of an example :

  (*a*) car L

  (*b*) cdr L   5

10. (*a*) Given the relations :

father (X, Y) . X is the father of Y

mother (X, Y) , X is the mother of Y

female (X) . X is a female

male (X), X is a male

Give the following relations :

(*i*) brother

(*ii*) first cousin.

(*b*) What do the following predicates in Prolog do ? 4

(*i*) compound (X)

(*ii*) atomic (X)

(*iii*) bag of (X, P, L)

11. (*a*) Write the relation in prolog for finding the maximum of two numbers :

(*i*) without using cuts

(*ii*) using cuts. 6

(b)   Given the grammar :

S → 0B 1A

A → 0 0S 1AA

B → 1 1S 0BB

for the string 00110101, find the following   4

(i)   Leftmost derivation

(ii)   Parse tree.