(2C

Total No. of Questions—**12**] [Total No. of Printed Pages—**4+2**

Seat No.	

T.E. EXAMINATION, 2014

PRINCIPLES OF PROGRAMMING LANGUAGES

(2008 PATTERN)

Time : Three Hours **Maximum Marks : 100**

N.B. :— (*i*) Answers to the two Sections should be written in separate answer-books.

(*ii*) Answer Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**, Q. No. **9** *or* Q. No. **10**, Q. No. **11** *or* Q. No. **12**.

(*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*) Explain in detail significance of readability of a programming language. What is the impact of user defined operator overloading on the readability of the program. [6]

(*b*) Explain the significance of attribute of a variable. [4]

P.T.O.

(*c*) Define the following terms : [6]

(*i*) Binding times

(*ii*) Scope rules

(*iii*) Type checking.

Or

2. (*a*) What are major application areas and corresponding programming languages ? [6]

(*b*) Why does the use of dynamic scoping imply the need for runtime type checking ? [4]

(*c*) Consider the following pseudo code : [6]

```
Procedure P(A, B : real)
X:real
    Procedure P(B,C:real)
    Y:real
    ...
    Procedure P(A,C:real)
    Z:real
    ...(*)
    ...
```

Assuming static scope, what is the referencing environment at the location marked by (*) ?

3. (*a*) Explain the desirable and undesirable characteristics of procedural programming language. [8]

(*b*) Explain the following with reference to PASCAL programming language : [8]

(*i*) Scope rules

(*ii*) Local and global variable

(*iii*) Parameter passing

(*iv*) Pointers.

Or

4. (*a*) Compare C and Pascal programming languages. [8]

(*b*) Describe the various stages of program execution in procedural programming language. [8]

5. (*a*) Explain features and application of the following kinds of Java programs : [10]

(*i*) Console application

(*ii*) Applet

(*iii*) Package.

(*b*) Explain the difference between dynamic and static method binding with respect to JAVA programming language. [8]

3. (*a*) Explain the desirable and undesirable characteristics of procedural programming language. [8]

(*b*) Explain the following with reference to PASCAL programming language : [8]

(*i*) Scope rules

(*ii*) Local and global variable

(*iii*) Parameter passing

(*iv*) Pointers.

Or

4. (*a*) Compare C and Pascal programming languages. [8]

(*b*) Describe the various stages of program execution in procedural programming language. [8]

5. (*a*) Explain features and application of the following kinds of Java programs : [10]

(*i*) Console application

(*ii*) Applet

(*iii*) Package.

(*b*) Explain the difference between dynamic and static method binding with respect to JAVA programming language. [8]

Or

6. (*a*) How did a JAVA compiler tell which constructor to use for given object ? [8]

(*b*) Explain the concept of Exception handling with respect to java. Explain the use of predefined exception with suitable example. [10]

SECTION II

7. (*a*) What is a base class of .NET framework ? What are the different languages supported by .NET for the development ? [8]

(*b*) What is assembly and delegates in C# ? Explain with suitable example. [8]

Or

8. (*a*) What is .NET technology ? What are the web services and their importance from business perspective ? List the web service protocols support by industry. [10]

(*b*) Explain the value type and reference type variable with respect to C#. [6]

9. (*a*) What is forward chaining and backward chaining in Prolog ? [8]

(*b*) Change the following sentences into facts and rules : [10]

A :- B, C, D.

A :- E, F.

B :- F.

E.

F.

A :- F.

Sketch the search space for the query ? A, E.

Or

10. (*a*) What is CUT operator in Prolog ? [8]

(*b*) Write and explain a typical program structure and write a simple prolog program to multiply two numbers. [10]

11. (*a*) Whether LISP supports macros and object definition. Justify with suitable example. [6]

(*b*) Write a function to find square of given list. For Ex. If L = (1, 3, 5, 7) the result is (1, 9, 25, 49). [6]

(*c*) Explain the numeric predicate functions supported by LISP. [4]

Or

12. (*a*) What is output of the following functional compositions ? [4]

(*i*) (CAR (CDR (CDR (ABC))))

(*ii*) (CONS (CAR (AB)) (CDR (AB)))

(*iii*) (MEMBER 'B (ACDE))

(*iv*) (NULL (CAR (C) BC)).

(*b*) Explain Free and Bound identifiers support with respect to Lambda calculus. [6]

(*c*) Explain reduction rule in functional programming language. [6]