

Total No. of Questions—12]

[Total No. of Printed Pages—4+2

Seat No.	
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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]

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- (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]

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]