Paper Code –TCS-504   193   No. of Printed page: 2

Paper ID and Roll No. to be filled in your Answer book
Roll. No.

B. Tech.
(SEM. V)
Principles of Programming languages

[Time: 2Hours]   Total Marks: 50

Note: Attempt all question

Q:-1   Attempt any 4 questions   2.5X4

a) Explain the various characteristics of programming languages.

b) Describe the concept of orthogonality in programming language design

c) Discuss the various design issues of the programming languages.

d) Discuss the various stages of translation clearly specifying the steps of lexical analysis (scanning), syntactic analysis (Parsing) and semantic analysis.

e) "The major implementation problem associated with pointers and programmer constructed data objects that use pointer linkages is the storage allocation associated with the creation operation", Explain.

f) Give a detail account of various types of translators.

Q:-2   Attempt any 4 questions   2.5X4

a) Define binding and binding time and illustrate them by considering the following simple statement: X=X+10.

b) Explain with suitable example type conversion and coercion.

c) Discuss type checking along with its types. Also state how the flaws in type checking structure may be treated.

d) Features in C allow the same meaning to be expressed in many ways. How many different statements can you write in C that adds 1 to a

variable X? Discuss the advantages and disadvantages of this aspect in the design of C.

e) Discuss the language paradigms in detail.

f) Give the accessing formula for computing the location of component A(I)(J) of a matrix A declared as int A[m][n] where m and n are constants and A is stored in row major order.

Q:-3 Attempt any 2 questions: 5X2

a) What is a virtual Computer? Discuss the layers of virtual computers for a

web application.

b) Give an example of an operation in a programming language that:

   i) Is implemented directly in hardware

   ii) Is implemented as a subprogram

   iii) Is implemented as an inline code sequence

c) Give an account of any one of the methods that uses encapsulation.

Q:-4 Attempt any 2 questions   10X2

a) Write the implementation of objects in Smalltalk.

b) Distinguish between the implicit and explicit sequence control. Explain the sequence control of basic statements, compound statements and conditional statements with example.

c) Distinguish between:

   i) Object-oriented language and Data Flow Language

   ii) Static Storage Management and Stack-based Storage Management

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