Total No. of Questions : 8]

SEAT No. :

P1766

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[5133]-1001

M.Sc.

COMPUTER SCIENCE

CS - 101 : Principles of Programming Languages

(2013 Pattern) (Semester - I)

Time : 3 Hours]

[Max. Marks : 50]

Instructions to the candidates:

1) Attempt any Five questions.

2) All questions carry equal marks.

3) Figures to the right indicates full marks.

Q1) Attempt all questions.

a) Explain the concept of strongly type language and statically type language with example. **[4]**

b) State and explain the problem with using association list. How it is solved? **[4]**

c) Define the terms **[2]**

   i) Competition synchronization.

   ii) Cooperation synchronization.

Q2) Attempt all questions. .

a) Describe static allocation of space for non - recursive subroutine. **[4]**

b) Define Lisp function to rotate a list in right direction till n. **[4]**

c) State 4 predicates in LISP with their purpose. **[2]**

Q3) Attempt all questions.

a) Define thread and coroutine. state the steps to turn coroutine into thread. **[4]**

b) Explain scope rule and binding rules with suitable example. **[4]**

c) Why prolog does not have generic read predicate? **[2]**

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Q4) Attempt all questions.

    a)   Explain with suitable example. How shared multiple inheritance is implemented? **[4]**

    b)   Write a tail recursive prolog program to print numbers from n to 1. **[4]**

    c)   What is lazy evaluation? **[2]**

Q5) Attempt all questions.

    a)   What is semaphore? What operations does it support? **[4]**

    b)   State a dangling pointer problem. Explain its solution. **[4]**

    c)   What is co-routine ? state the difference between co-routine and sub routine. **[2]**

Q6) Attempt all questions.

    a)   Discuss contiguous and row pointer layout of an array with an example. **[4]**

    b)   Describe how virtual functions can be used to achieve the effect of subroutine closurs? **[4]**

    c)   State the circumstances where bootstrapping is neccessary. **[2]**

Q7) Attempt all questions.

    a)   Explain difference between applicative and normal order evaluation of expression. **[5]**

    b)   State six different syntactic constructs commonly used to create new thread of control in a concurrent program? Explain any one. **[5]**

Q8) Attempt all questions.

    a)   Write a C/C++ function that declares an array statically, on the stack and on the heap. Explain which one is more efficient. **[5]**

    b)   What are discriminated and free unions? Explain with the help of suitable diagram. **[5]**

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