SEVENTH SEMESTER B.TECH. (ENGINEERING) (09 SCHEME) DEGREE EXAMINATION, NOVEMBER 2014

CS/PTCS 09 702—DESIGN AND ANALYSIS OF ALGORITHMS

Time : Three Hours

Maximum : 70 Marks

Part A

Answer **all** *questions.*

I. (a) Differentiate between call-by-value and call-by-reference parameter passing.

   (b) What are Abstract Syntax Trees ?

   (c) What are objects ? How are they related with class ?

   (d) List the elements of functional programming.

   (e) Distinguish between concurrent programming and logic programming.

$(5 \times 2 = 10 \text{ marks})$

Part B

Answer any **four** *questions.*

II. (a) How do arrays differ from records ? What are variant records ?

   (b) Explain in detail about the major features of object oriented programming.

   (c) Write an overloaded function Swap() to exchange the values of two variable say A and B using reference variable.

   (d) What is inheritance ? List and explain any *three* types of inheritance supported by C++ with suitable program.

   (e) What is a control in PROLOG ? Explain it uses with suitable example.

   (f) Explain implict synchronization. How does it differ from hardware level parallelism ?

$(4 \times 5 = 20 \text{ marks})$

Part C

III. (a) Describe in detail about the compound types. How it is implemented in C language ? Explain with an example program.

Or

   (b) What is structured programming ? Explain all the constricts for structured control flow.

IV. (a) Let $n = 4$ and $m = 15$ the profits for the instances are $(p1, p2, p3, p4, p5) = (10, 10, 12, 18)$ and the weights are $(w1, w2, w3, w4, w5) = (2, 4, 6, 9)$. Explain the working of 0/1 knapsack problem using LC branch and bound technique.

Or

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(b) Find the optimal and all feasible solution for the Knapsack problem. The sack maximum capaicty is 100. The item weights and corresponding profits are W = (10, 20, 30, 40, 50) and P = (20, 30, 66, 40, 60). Fill the sack such that the sack capacity should not exceed the maximum capacity and objective of the problem is to maximize the profit.

V. (a) Explain manipulation of list with an example program.

Or

(b) Explain the process of evaluating an infix expression with appropriate example.

VI. (a) Define lexical scope and explain with an example.

Or

(b) Discuss about the storage allocation features of lists with an example problem in C++.

(4 × 10 = 40 marks)