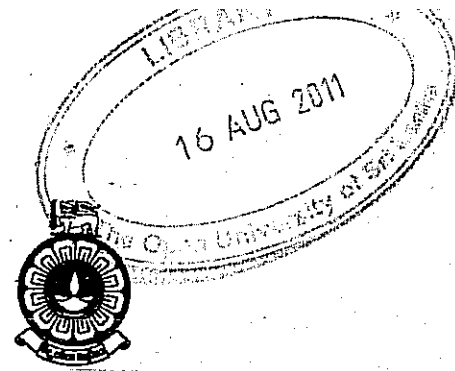


THE OPEN UNIVERSITY OF SRI LANKA
B.SC. DEGREE PROGRAMME: LEVEL 04
OPEN BOOK TEST: 2010/2011
CSU2279: DATA STRUCTURES AND ALGORITHMS

DURATION: ONE AND HALF HOURS (1 ½ HOURS)



Date: 11th March, 2011

Time: 4.00 pm – 5.30 pm

Answer ALL Questions.

Q1.

- What is an *ADT*?
- Describe two properties of an *ADT*.
- Write a Pascal programme to create an *ADT* to store the scores of players of a cricket match. Your program should output all players' names with their scores. Assume that, all players (11 x 2) bat in this match.
- What is a *data structure*?
- Name two *grouping mechanisms* in Pascal. Give an example for each mechanism.

Q2.

- Define the array implementation of a *list* which can hold a maximum of 100 numbers.
- Define a pointer based *doubly link list* data structure for a class of 25 students to store their names and average of marks.
- Using an appropriate diagram, explain the need of *header* and *nil* pointer.
- State the advantages and disadvantages of a *doubly link list*.
- Compare and contrast the array implementation and pointer implementation of a *list*.

Q3.

- Compare and contrast the array implementation of a *stack* and a *queue*.
- Define an array implementation of a *stack* which can hold a maximum of 20 characters.
- Write a Pascal procedure/function to add 10 character elements in to the above *stack*.
- Write a Pascal procedure/function to print the contents of the above *stack*.
- Using appropriate diagrams explain the circular array implementation of a *queue*.