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RN-8067

B. E. II (Sem. III) (CO/IT) Examination

May / June - 2010

Data & File Structure

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशाविले निशानीवाणी विगतो उत्तरवडी पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. 2 (Sem. 3) (CO/IT)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Data & File Structure"/>	<input type="text"/>
Subject Code No. : <input type="text" value="8"/> <input type="text" value="0"/> <input type="text" value="6"/> <input type="text" value="7"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&2"/>	
	Student's Signature

- (2) Use **separate** answer sheet for each section.
- (3) Make assumption whenever required.
- (4) Numbers on the **right** indicate marks.

SECTION - I

- 1 (a) Answer the following : (any 5) 10
 - (1) Define data structure and list its different types with an example.
 - (2) Discuss disadvantages of stack and queue compare to linked list.
 - (3) List different types of queue.
 - (4) Convert following postfix expression to infix. And clearly show the intermediate steps :
a, b, c, ^, +, d, -, e, f, *, g, /, +, h, -.
 - (5) Convert following infix to postfix using stack :
 $((a + b) / (c - d) ^ e) * f + g / (h - i)$.
 - (6) Convert following infix to prefix using stack :
 $((a + b) / (c - d) ^ e) * f + g / (h - i)$
 - (7) Evaluate the following prefix expression :
*, +, -, 15, 10, -5, 2.
- (b) To generate fibonacci series which procedure will be better, recursive or iterative ? Justify your answer with proper example. 10
- 2 (a) Write an algorithm for an insertion and deletion operation on circular queue. 7

- (b) What do you mean by minimizing overflow ? Explain with example and also write an algorithm to insert and delete data item from that data structure. 8

OR

- (b) Write a recursive procedure TRIM which removes all blanks from the front and rear of a string of text. Therefore TRIM (" Hello World !! ") returns "Hello World !!". 8
- 3 (a) Write an algorithm to implement stack of queues. 10
(b) Explain application of linked list. 5

OR

- (b) Explain height balanced tree. 5

SECTION – II

- 4 (a) Answer the following : 10
(1) What is the difference between Linear search and Binary search ? Where they are used ?
(2) Define : leaf node and siblings with example.
(3) What do you mean by complete binary tree ? Explain with example.
(4) What is threaded binary tree ? Write advantages and disadvantages of threaded binary tree.
(5) What is storage poll ?
(6) What is spanning tree ?
(7) What do you mean by cyclic graph ?
(8) Explain space complexity of an algorithm.
(9) What is AVL tree ?
(10) What is adjacency matrix ?
(b) Write an algorithm for inorder traversal of binary tree. 10
- 5 (a) Construct binary tree of the following : 8
K, S, D, G, T, E, M, H, P, A, F, U.
(i) Find the in order traversal.
(ii) Delete node E from constructed threaded binary tree.
(iii) Find the pre order traversal after step (ii).

OR

- (a) Write an algorithm to reverse the direction of all the links of a singly linked list. 8

- (b) Write a C routine to interchange the m^{th} and n^{th} element of a list. 8
- 6 (a) Write a program to open a file to read the content of file and display it on to screen. After that write a string to the same file. 10
- (b) Given input (4371, 1323, 6173, 4199, 4344, 9679, 1989) and a hash function $h(x)=X \bmod 10$, show the result of linear probing. 4

OR

- (b) What do you mean by collision ? Explain different methods to resolve it. 4
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