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**Question Paper Code: 52209**

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Second Semester

Computer Science and Engineering

15UCS209 - PROGRAMMING AND DATA STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

PART A - (5 x 1 = 5 Marks)

1. The size of a union is determined by the size of the \_\_\_\_\_ CO1-U  
(a) First member in the union (b) Last member in the union  
(c) Biggest member in the union (d) Sum of the sizes of all members
2. What does the following declaration mean? CO2-U  
`int (*ptr)[10];`  
(a) ptr is array of pointers to 10 integers  
(b) ptr is a pointer to an array of 10 integers  
(c) ptr is an array of 10 integers  
(d) ptr is an pointer to array
3. Which of the following mode argument is used to truncate? CO3-R  
(a) a (b) f (c) w (d) t
4. What is the time complexity of inserting a node in a doubly linked list? CO4-U  
(a)  $O(n \log n)$  (b)  $O(\log n)$  (c)  $O(n)$  (d)  $O(1)$
5. Process of inserting an element in stack is called CO5-R  
(a) Create (b) Push (c) Evaluation (d) Pop

PART – B (5 x 3= 15Marks)

6. Differentiate structure and union. CO1-U
7. Identify the use of Pointer. CO2-U

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|-----|--|-------|
| 8.  | Mention the different file opening modes in C. | CO3-R |
| 9.  | Define ADT. Give any two examples.             | CO4-R |
| 10. | Define stack and queue.                        | CO5-R |

PART – C (5 x 16= 80Marks)

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|-----|--|--------|------|
| 11. | (a) Define a structure to store details of 10 bank customers with customer name, account number, balance and city. Write a C program to store the details of the customer in the bank, access and print the customer details for the specified account number. | CO1-U  | (16) |
|     | Or   |        |      |
|     | (b) Discuss in detail about the concept of<br>(i) Nested structures with an example.<br>(ii) Self referential structures with an example.  | CO1- U | (16) |
| 12. | (a) What is an array of pointers and what is pointer to an array? Explain in detail with example.  | CO2-U  | (16) |
|     | Or   |        |      |
|     | (b) Interpret the concept of dynamic memory allocation with suitable example.  | CO2-U  | (16) |
| 13. | (a) (i) Write the C program to read the contents of file "in.txt" and write the contents to a file "out.txt".<br>(ii) Discuss in detail about command line arguments.  | CO3-U  | (8)  |
|     |  | CO3-U  | (8)  |
|     | Or   |        |      |
|     | (b) Interpret the concept of error handling during I/O operations in C programming.  | CO3-U  | (16) |
| 14. | (a) Explain in detail to perform the following operations in a doubly linked list.<br>(i) Insert a node at the end of the list.<br>(ii) Delete the last node in the list.  | CO4-U  | (16) |
|     | Or   |        |      |
|     | (b) Illustrate how polynomial manipulations are performed using lists? Explain any two operations with example.  | CO4-U  | (16) |
| 15. | (a) Describe with an example how to evaluate arithmetic expressions using stacks.  | CO5-U  | (16) |
|     | Or   |        |      |
|     | (b) Illustrate the enqueue and dequeue operations on double ended queues.  | CO5-U  | (16) |

