

University of Mumbai

Program: **Information Technology**

Curriculum Scheme: Rev2019

Examination: SE Semester-III

Course Code: ITC302 and Course Name: Data Structure & Analysis

Time: 2 hour 30 minutes

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
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| 1. | Nature of Stack isdata structure? |
| Option A: | LIFO |
| Option B: | RING buffer |
| Option C: | shift right |
| Option D: | FIFO |
| 2. | What is the postfix expression for the given infix expression $(b * c) + (d / e)$ will be.....? |
| Option A: | bcd*e/+ |
| Option B: | b*cde/+ |
| Option C: | bc*de/+ |
| Option D: | bc*de+/- |
| 3. | Data structure is a representation of allowed on that data. |
| Option A: | data and the operations |
| Option B: | data and operators |
| Option C: | data and method |
| Option D: | data and information |
| 4. | which is the correct linear data structure from the given pair below |
| Option A: | Graph and tree |
| Option B: | array and stack |
| Option C: | tree and array |
| Option D: | linked list and graph |
| 5. | Circular Queue is also called as |
| Option A: | Square Buffer |
| Option B: | Ring buffer |
| Option C: | Stack Buffer |
| Option D: | Queue buffer |
| 6. | If we want to insertion a node in between the first and last node in a single circular linked list which requires how many pointer? |
| Option A: | One pointer |
| Option B: | Two pointer |
| Option C: | Three pointer |
| Option D: | None |

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| 7. | In linked list each node contains a minimum of two fields. One field is data field to store the data second field is.....? |
| Option A: | Pointer to character |
| Option B: | Pointer to integer |
| Option C: | Pointer to node |
| Option D: | Node |
| 8. | Which of the following option is used to create new node? <pre> struct node { int data; struct node * next; } typedef struct node NODE; NODE *ptr; </pre> |
| Option A: | ptr = (NODE*)malloc(NODE); |
| Option B: | ptr = (NODE*)malloc(sizeof(NODE*)); |
| Option C: | ptr = (NODE*)malloc(sizeof(NODE)); |
| Option D: | ptr = (NODE)malloc(sizeof(NODE)); |
| 9. | In Linked list _____ type of memory allocation take place. |
| Option A: | Static |
| Option B: | Compile time |
| Option C: | Heap |
| Option D: | Dynamic |
| 10. | If a pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list? |
| Option A: | Delete the first element |
| Option B: | Delete the last element of the list |
| Option C: | Insert a new element as a first element |
| Option D: | Add a new element at the end of the list |

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| Q 2 | Solve any Two Questions out of Three | 10 marks each |
| | A) What is ADT? and compare Linear and Nonlinear data structure B) Explain Huffman coding with a suitable example C) Explain stack data structure with their properties and what the different application of stack is. | |

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| Q 3 | Solve any Two Questions out of Three | 10 marks each |
| | A) Explain circular queue with proper example B) Explain linked List with proper example C) Explain Doubly Linked List with proper diagram | |

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| Q 4 | Solve any Two Questions out of Three | 10 marks each |
| | A) Explain AVL tree with proper example. B) Write difference between linear search and binary search C) What is hashing and what is collision and explain to avoid collision | |