



Sikkim Manipal University

Model Question Paper

Subject: Data Structure Using C

Total Time: 2 hours

Subject code: BC 0038

Total Marks: 140

Notes:

1. Question paper is divided into three parts i.e. Part A, Part B, and Part C.
2. Part A consist 40 questions of one mark each
3. Part B consist 20 questions of 2 marks each.
4. Part C consist 15 questions of 4 marks each.
5. All questions are compulsory

Part A (One Mark Question)

- 1) `int a[]={5,4,3,2,1}` What is the value of `a[3]`?
 - a. 2
 - b. 3
 - c. 4
 - d. 1
- 2) `float a[10];` What is the size of the array?
 - a. 10
 - b. 20
 - c. 30
 - d. 40
- 3) Array is :
 - a. Primary data type
 - b. Homogeneous data type
 - c. Pointer data type
 - d. Heterogeneous data type
- 4) Array index can be started from 1?
 - a. Yes
 - b. No
- 5) To accept 100 different values into the array we require:
 - a. Loop
 - b. If condition
 - c. Function
 - d. Structure
- 6) Pointer holds
 - a. Value of variable
 - b. Address of variable
 - c. Value and address of variable
 - d. Always null

- 7) A pointer can hold
- Two addresses at a time
 - Single address at a time
 - Number of addresses at a time
 - No address

8) main() {

```
int a=3,b=2,c,*d,*e;  
d=&a; e=&b;  
c=*d+*e;  
}
```

Which one of the given answers is correct?

- a=4,c=6
 - a=3, c=8
 - a=3, c=6
 - a=3,c = 5
- 9) Assume that variable **x** resides at memory location 100, **y** at 200 and **ip** at 1000.

```
int x=1; y=2,*ip;
```

```
ip=&x;
```

```
y=*ip;
```

What will be the value of **y** after execution of above code?

- 1
 - 2
 - 100
 - 1000
- 10) Which of the following is the correct way of declaring an array of integer pointers?
- int *arr[10];
 - int arr[10];
 - *int arr[10];
 - int *arr;
- 11) If an integer occupies 4 bytes and a character occupies 1 byte of memory, each element of the following structure would occupy how many bytes?

```
struct name {  
int age;  
char name[30];  
};
```

- a. 32
 - b. 34
 - c. 30
 - d. 2
- 12) A structure brings together a group of
- a. items of the same data type
 - b. related data items and variables
 - c. integers with user defined names
 - d. floating points with user defined names
- 13) To identify a member element of a structure we use :
- a. dot (.) operator
 - b. plus(+) operator
 - c. * operator
 - d. & operator
- 14) When the structure is accessed through pointer then we use to access member elements by
- a. Dot (.) operator
 - b. * operator
 - c. →operator
 - d. & operator
- 15) We can create array of structure:
- a. Yes
 - b. No
- 16) The data structure has the following components
- a. Algorithm, storage structure and function of implementation
 - b. Algorithm, data type and function of implementation
 - c. Function, storage structure and program
 - d. Algorithm, data structure and program
- 17) In linked list, the successive element
- a. Must occupy contiguous locations in memory
 - b. Need not occupy contiguous space in memory
 - c. Must not occupy contiguous locations in any situation
 - d. None of the above
- 18) Link pointer variable in linked list contain address of the
- a. Following node in the list
 - b. Current node in the list
 - c. First node in the list
 - d. None of the above
- 19) Which of the following liner list structure allow both insertion and deletion at only one end?
- a. Queue

- b. Stack
 - c. Circular queue
 - d. d) None of the above
- 20) Pick out invalid statement from following : Queues can be used for
- a. The line printer
 - b. Access to disk storage
 - c. Function call
 - d. Main Memory Access
- 21) In Stack we insert data from:
- a. Front End
 - b. Rear End
 - c. Both End
 - d. Top End
- 22) The Stack overflow occurs when
- a. When stack contains maximum elements
 - b. When stack contains minimum elements
 - c. When stack contains half of the maximum elements
 - d. When stack is empty
- 23) Stack maintains the algorithm
- a. LIFO
 - b. FIFO
 - c. FILO
 - d. LILO
- 24) The stack is easy to maintain by
- a. Array
 - b. Link List
 - c. Structure
 - d. Union
- 25) Application of Stack is :
- a. Function Call
 - b. Storage data in memory
 - c. Dynamic memory allocation
 - d. Structure definition
- 26) When PUSH operation is done then
- a. $TOP=TOP+1$
 - b. $TOP = TOP-1$
 - c. $TOP=-1$
 - d. $TOP=0$
- 27) When POP operation is done then

- a. $TOP=TOP+1$
 - b. $TOP = TOP-1$
 - c. $TOP=-1$
 - d. $TOP=0$
- 28) We can change the insertion position of the Stack
- a. Yes
 - b. No
- 29) In the Sack $STACK_SIZE$ is :
- a. Fixed
 - b. Variable
- 30) A stack cannot be used to
- a. evaluate an arithmetic expression in postfix form
 - b. implement recursion
 - c. convert infix form to postfix from of an expression
 - d. allocate resources by operating system
- 31) If the in-order pre-order traversal of a binary tree are D,B,F,E,G,H,A,C and A,B,D,E,F,G,H,C respectively then post order will be:
- a. D,F,G,A,B,C,H,E
 - b. F,H,D,G,E,B,C,A
 - c. D,F,H,G,E,B,C,A
 - d. C,G,H,F,E,D,B,A
- 32) Stack is useful for implementing breadth first search
- a. True
 - b. False
- 33) The Polish Notation is
- a. Post order
 - b. Pre order
 - c. In order
 - d. None of these
- 34) Infix to post fix conversion we need :
- a. Stack
 - b. Queue
 - c. Structure
 - d. Union
- 35) Requirement of Polish Notation
- a. Because the notation does not have any priority
 - b. Because the notation have priority
- 36) What algorithm is used in Queue?

- a. FILO
 - b. LILO
 - c. FIFO
 - d. LIFO
- 37) From which end of Queue elements are deleted?
- a. Rear
 - b. Front
 - c. Middle Position
 - d. Any position of the queue
- 38) The Queue Size can be
- a. Dynamically changed
 - b. Static, cannot be changed
- 39) POP from queue needs checking
- a. Queue Full Condition
 - b. Queue Empty Condition
 - c. Stack Full Condition
 - d. Stack Empty Condition
- 40) Queue is easy to implement by
- a. Array
 - b. Link List
 - c. Structure
 - d. Union

Part B (Two Mark Question)

- 41) Which of the following data structure may give overflow error, even though the current number of elements in it is less than its size?
- a. Stack
 - b. circular queue
 - c. simple queue
 - d. none of the above
- 42) The basic problem of space utilization has been removed by
- a. Stack
 - b. Circular Queue
 - c. Double Ended Queue
 - d. Queue Size
- 43) What is the difference between Stack & Queue?
- a. Storage Structure
 - b. Memory Allocation
 - c. Algorithm

- d. All of the Above
- 44) Queue can be represented by
 - a. Array
 - b. Link List
 - c. Tree
 - d. Only a) and b) is correct
- 45) Queue is
 - a. Linear Data Structure
 - b. Non Linear Data Structure
- 46) Josephus Problem is the application of
 - a. Ordinary Queue
 - b. Circular Queue
 - c. Double Ended Queue
 - d. Priority Queue
- 47) The priority queue requires FRONT and REAR:
 - a. One only
 - b. Multiple
 - c. None
 - d. Two only
- 48) The access of Queue elements is
 - a. Sequential
 - b. Random
 - c. Direct
 - d. Indexed
- 49) Front and Rear can be interchangeable in
 - a. Dqueue
 - b. Priority Queue
 - c. Circular Queue
 - d. Ordinary Queue
- 50) One Application of Priority Queue is
 - a. CPU scheduling
 - b. Ready Queue for printing
 - c. Data Access from RAM
 - d. Reading data through Scanner
- 51) Linked List is
 - a. Linear Data Structure
 - b. Non Linear Data Structure
- 52) To create linked list created by

- a. Structure
 - b. Union
 - c. Array
 - d. Macro
- 53) Each node of linked list has two parts
- a. Data & Address
 - b. Data & Null
 - c. Address & Null
 - d. Address & Address
- 54) Linked List allocate memory space in
- a. Direct fashion
 - b. Contiguous fashion
 - c. Random fashion
 - d. Indexed fashion
- 55) Advantage of Linked List over array
- a. Linked List occupies less memory
 - b. Linked List can be stored in disk
 - c. Deletion of nodes is easy than array
 - d. Linked List is easy to maintain
- 56) In Circular Link List
- a. Head node contains the address of tail node
 - b. Tail node contains the address of the head
 - c. Head node contains the address of the middle node
 - d. Tail node contains the address of the middle node
- 57) In Doubly Linked List each node contains
- a. No address part
 - b. One address part
 - c. Two address part
 - d. Three address part
- 58) We can traverse in either direction
- a. Singular Linked List
 - b. Circular Linked List
 - c. Doubly Linked List
 - d. Tree Linked List
- 59) The application of Linked List
- a. Add two characters
 - b. Add two large numbers
 - c. Add two Strings
 - d. Add two very small numbers
- 60) Can we delete the head node from Doubly Linked List

- a. True
- b. False

Part C (Four Mark Question)

- 61) Which of the following statements is TRUE? A B-Tree of order
- a. 24 contains at least 12 key in each non root node
 - b. 25 contains at least 12 keys in each node
 - c. 24 contains at least 23 keys in each non root node.
 - d. None of the above.
- 62) What is the minimum number of keys contained in each non root node of a B-Tree of order 11?
- a. 4
 - b. 5
 - c. 3
 - d. 1
- 63) If the degree of a node is 0 then the tree is called
- a. Trinary Tree
 - b. Single Edged tree
 - c. Single node tree
 - d. Single degree tree
- 64) Number of all possible binary trees with 2 nodes is
- a. 1
 - b. 2
 - c. 3
 - d. 4
- 65) Binary Tree Traversal is faster in
- a. Ordinary Binary Tree
 - b. Binary Search Tree
 - c. Threaded Binary Tree
 - d. AVL Tree
- 66) In complete binary tree the number of nodes in level 0 is
- a. 0
 - b. 1
 - c. 2
 - d. 3
- 67) AVL tree is a special types of
- a. Binary Tree
 - b. Binary Search Tree
 - c. Threaded Binary Tree
 - d. B-Tree

- 68) In AVL Tree, the Balance Factor is calculated as
- Left Height – Left Height
 - Right Height – Right Height
 - Left Height – Right Height
 - Middle Height – Right Height
- 69) The minimum balance factor of a node in AVL tree is
- 2
 - 1
 - 0
 - 1
- 70) The Polish Notation is
- Prefix notation
 - Postfix notation
 - Infix notation
 - All of the above
- 71) An adjacency matrix representation of a graph cannot contain information of
- Nodes
 - Edges
 - direction of edges
 - parallel edges
- 72) The strongly connected graph
- can connect from one node to any other node
 - can connect from few nodes to other few nodes
 - cannot connect to other nodes
 - can connect only one node
- 73) If no parallel edges in a 4 vertices graph , what is the maximum degree of a vertex?
- 4
 - 3
 - 2
 - 1
- 74) For Graph Traversal
- DFS & BFS
 - Prefix
 - Infix
 - Postfix
- 75) Spanning Tree related to
- Kruskal's Algorithm
 - Piterson's Algorithm
 - Newton's Algorithm
 - Ratherford's Algorithm