INSTRUCTIONS TO CANDIDATES

DAC – Data structure

Candidate should read the following instructions before attempting the question paper.

1. **DO NOT CLOSE THE BROWSER ANYTIME DURING THE EXAM.**

2. Candidate **should check his/her name and extended enrollment Number (enrollment number prefixed with XX)** being displayed on the screen. In case of any discrepancy, it should be reported to Invigilator immediately.

3. Candidate should ensure that he/she has marked attendance on the attendance sheet and also ensure that session id has also been recorded. Any other session id which has not been mentioned in the attendance sheet would not be considered and all responses on that session id would be treated as null and void.

4. Do not start the exam (do not click **Next** button) before instructed to do so by the Invigilator.

5. **Every Section has 40 objective-type questions.** Each objective-type question has four choices of which only one is correct. Candidate should select the radio button, given below the question, corresponding to his/her correct choice.

6. Marking scheme of CCEE is as follows:

    a. +1 (plus one) marks for each correct answer.
    b. 0 (zero) mark for each un-attempted/ wrong question.

7. **Duration of each Section is One hour**. No candidate will be allowed to leave the examination hall before the completion of exam duration.

8. On clicking the **Next** button given at the bottom of the Instructions page, candidate will be directed to the question display screen.

9. Candidate should **note down the Session ID** that is displayed on the question screen after clicking on **Next** button.

10. Once the exam is started:-

    a. Candidate should not close the browser. In case the browser is closed accidentally, it SHOULD BE reported to the Invigilator immediately.

b. Candidate should not open any other software application on the computer system.

c. Candidate should neither shut down the machine nor fiddle with allocated hardware or software.

d. In case of any problem it should be reported to Invigilator.

11. Candidate can navigate through questions using scroll bar or directly through the question number grid.

12. CCEE screen contains the following buttons with the below specified functionality:

Button	Functionality
Examination Instruction	This link will open the instructions for the exam. After reading the instructions candidate has to click on **Back** button to move back to the questions interface.
Mark for Review	In case a candidate is not sure about the answer, then he/she can use this Button to mark the question for a visit later. It will be shown with a **?** against the question (in the question number grid) if the question has not been answered but has marked it for review. In case candidate has answered the question and marked it for review, then **√?** will be displayed against the question in the question number grid.
Clear Answer	This button will clear the option marked and the question will be shown as un-answered.

13. Each candidate will be provided one A4 size sheet for rough work. Candidates have to record their Name, hall ticket number and session ID on the rough sheet. They have to return the rough sheet to the Invigilator before leaving the exam hall.
14. Calculators, mobile phones, pagers and electronic gadgets in any form are not allowed to be used in the Exam Hall.

15. Candidate will be disqualified if found indulging in any kind of malpractice.

1. Which of the following will help to find creative solution to problem?
A. Brainstorming, Reverse Brainstorming, Mind Mapping
B. Coding
C. Testing
D. Feasibility study

2. A queue has been implemented with a linked list, keeping track of a front node and rear node with two reference variables. Which of these reference variables will change during an insertion into an EMPTY queue?

A. Neither changes

B. Only rear changes.

C. Only front changes.

D. Both change.

3. Which of the following is fastest searching algorithm?
A. Hashing
B. Linear search
C. Binary search
D. Fibonacci search

4. Identify the correct sequence of below actions for implementing decisions?
I. Create an action plan
II. Prioritize actions and assign roles
III. Break solution into action steps
IV. Follow-up at milestones
A. I, III, II, IV
B. I, II, III, IV
C. I, IV, II, III
D. IV, III, II, I

5. Circular queue uses memory locations by resetting rear and front markers with the help of _____ operator.
A. ->
B. %
C. ::
D. New

6. Pointer of the last node points to the first node of list in _____.
A. Stacks
B. Queue
C. Circular Queue
D. Priority Queue

7. Elements can be added or removed from both the ends of a data structure of type _____.
A. Stack
B. Circular queue
C. Dequeue
D. Priority queue

8. Memory is utilized optimally in case of _____.
A. Arrays
B. Linked Lists
C. Tree
D. Graph

9. Pointing to a previous node and next node is possible in _____.
A. Singly linked list
B. Doubly linked list
C. Circularly linked list
D. none

10. Which of the following best describes the operation of the Dequeue class?

A. First in first out.
B. First in last out.
C. Last in first out.
D. Data can be inserted from any end.

11. If numbers of elements are not known in advance, the best implementation is _____.
A. Array
B. Linked list
C. Structure
D. Union

12. Which of following is false about Tree?
A. Tree is acyclic connected graph
B. Tree is non-linear data structure
C. There can be multiple root nodes in tree
D. The height or depth of tree is defined to be maximum level of node in that tree

13. A tree node with no children is called as ……. node.
A. Leaf node
B. Root node
C. Parent node
D. Ancestor node

14. In which of the following tree height of left sub tree and height of right sub tree differ at most by one?
A. AVL Tree
B. Expression Tree
C. Threaded Binary Tree
D. B Tree

15. Which of the following operation is performed to balance AVL tree?
A. Insert
B. Rotate
C. Shift
D. Delete

16. For a binary search to be performed, the elements are to be in _____.
A. sorted list
B. any order
C. all +ve
D. non zero elements

17. Re-arranging elements according to a well defined ordering rule is called _____.
A. Searching
B. Indexing
C. Sorting
D. Analyzing

18. Repeatedly selecting the smallest remaining item is done for which type of sorting _____.
A. Selection sort
B. Insertion sort
C. Bubble sort
D. radix sort

19. If elements are almost ordered, the preferable sorting technique is_____.
A. Selection sort
B. Bubble sort
C. heap sort
D. Merge sort

20. Search algorithm for hashing consists of _____.
A. Hash function
B. Collision resolution
C. Hash function and Distribution
D. Hash function and Collision resolution

21. Hashing with linear probing method is called _____.
A. open addressing
B. close addressing
C. Double hashing
D. Hash functioning

22. A Graph traversal technique is _____.
A. Pre order
B. Post order
C. Breadth first
D. Height first

23. A graph in which edges have direction is called as_____.
A. Diagraph
B. Complete graph
C. Undirected graph
D. None of these

24. The post order traversal of a binary tree is DEBFCA. Find out the pre order traversal
   A. ABFCDE
   B. ADBFEC
   C. ABDECF
   D. ABDCEF

25. Breadth First Search graph traversal method makes use of _____ data structure.
A. Tree
B. Stack
C. Queue
D. Linked list

26. Depth First Search graph traversal method makes use of ……. data structure.
A. Tree
B. Stack
C. Queue
D. Linked list

27. Graph can be represented using _____.
A. Adjacency matrix
B. Sparse matrix
C. Adjacency list
D. All of the above

28. Which of the following is/are variations to the greedy algorithm?
A. Pure greedy algorithms
B. Orthogonal greedy algorithms
C. Relaxed greedy algorithms
D. All of the above

29. Which of the following is not Dynamic Programming approach?
A. Forward approach
B. Backward approach
C. Bidirectional approach
D. None of these

30. Which of the following are true about divide and conquer algorithms?
A. Divide and conquer algorithm design paradigm based on multi-branched recursion.
B. A divide and conquer algorithm works by recursively breaking down a problem into two or more sub-problems of the same type
C. Quick sort and merge sort use divide and conquer
D. All of the above

31. The Linked list in which last node of Linked List points to first node and first node also points to last node is called as_____.
A. Singly Linked List
B. Doubly Linked List
C. Circular Singly Linked List
D. Circular Doubly Linked List

32. How many pointers need to be modified to insert node in Circular Doubly Linked List?
A. One
B. Two
C. Four
D. Five

33. The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, * is
A. 600
B. 350.
C. 650.
D. 588.

34. A Data Structure that allows accessing elements in the order of LIFO is _____.
A. Stack
B. Queue
C. Tree
D. Graph

35. Two main measures for the efficiency of an algorithm are…….
A. Processor and memory
B. Complexity and capacity
C. Time and space
D. Data and space

36. In a singly linked list if a new node is to be inserted between two consecutive nodes how many links have to be modified?

A. 1
B. 2
C. 3
D. 4

37. Which of the following is not related to problem solving cycle?
A. Identify the problem
B. Define the problem
C. Combine relevant and irrelevant information
D. Identify a strategy

38. . The equivalent prefix expression for the following infix expression (A+B)-(C+D*E)/F*G is

A. -+AB*/+C*DEFG
B. /-+AB*+C*DEFG
C. -/+AB*+CDE*FG
D. -+AB*/+CDE*FG

39. Here is an infix expression: 4+3*(6*3-12). Suppose that we are using the usual stack algorithm to convert the expression from infix to postfix notation. What is the maximum number of symbols that will appear on the stack AT ONE TIME during the conversion of this expression?

A. 1
B. 2
C. 3
D. 4

40. How many null pointer/s exist in a circular double linked list?

A. 1
B. 2
C. 3
D. 0