

MIZORAM PUBLIC SERVICE  
COMMISSION

*Technical Competitive Examinations for  
Recruitment to the post of  
Inspector of Legal Metrology  
under Food, Civil Supplies & Consumer  
Affairs Department*

Time Allowed : 2 hours  
Full Marks : 150

**Computer Science & Engineering Paper-II**

INVIGILATOR

CENTRE SUPERINTENDENT

Date of Exam. : 26/03/2010

**Instructions to candidates:**

- Enter your Roll No. in the box provided on the front page.
- Attempt all the questions.
- Each question is followed by probable answers. Choose the appropriate answer and mark it by putting '✓' mark on the corresponding box.
- If more than one answer boxes are marked for a question, the answer will be treated as wrong.
- On completion, you are to submit the booklet to the Invigilator.

Code Number : .....  
(For Official Use)

Marks Obtained : .....

Examiner

Scrutiniser

MIZORAM PUBLIC SERVICE  
COMMISSION

*Technical Competitive Examinations for  
Recruitment to the post of  
Inspector of Legal Metrology  
under Food, Civil Supplies & Consumer  
Affairs Department*

Time Allowed : 2 hours  
Full Marks : 150

**Computer Science & Engineering Paper-II**

Roll Number :

Date of Exam. : 26/03/2010

Code Number : .....  
(For Official Use)

1. What is the time complexity of linear search algorithm over an array of  $n$  elements?  
(a)  $O(\log_2 n)$  .....       (b)  $O(n)$  .....   
(c)  $O(n \log_2 n)$  .....       (d)  $O(n^2)$  .....
2. What is the time taken by binary search algorithm to search a key in a sorted array of  $n$  elements?  
(a)  $O(\log_2 n)$  .....       (b)  $O(n)$  .....   
(c)  $O(n \log_2 n)$  .....       (d)  $O(n^2)$  .....
3. What is the time required to search an element in a linked list of length  $n$ ?  
(a)  $O(\log_2 n)$  .....       (b)  $O(n)$  .....   
(c)  $O(1)$  .....       (d)  $O(n^2)$  .....
4. Which of the following operations is performed more efficiently by doubly linked list than by linear linked list?  
(a) Deleting a node whose location is given .....   
(b) Searching an unsorted list for a given item .....   
(c) Inserting a node after the node with a given location .....   
(d) Traversing the list to process each node .....
5. Which data structure is needed to convert infix notations to postfix notations?  
(a) Linear list .....       (b) Queue .....   
(c) Tree .....       (d) Stack .....
6. Recursive procedures are implemented by  
(a) Queues .....       (b) Stacks .....   
(c) Linked lists .....       (d) Strings .....
7. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as  
(a) queues .....       (b) stacks .....   
(c) tree .....       (d) deque .....
8. A linear list in which elements can be added or removed at either end but not in the middle, is known as  
(a) queue .....       (b) deque .....   
(c) stack .....       (d) tree .....
9. The time required to search an element in a binary search tree having  $n$  elements is  
(a)  $O(1)$  .....       (b)  $O(\log_2 n)$  .....   
(c)  $O(n)$  .....       (d)  $O(n \log_2 n)$  .....

10. Consider that  $n$  elements are to be sorted. What is the worst case time complexity of Bubble sort?  
(a)  $O(1)$  .....  (b)  $O(\log_2 n)$  .....   
(c)  $O(n)$  .....  (d)  $O(n^2)$  .....
11. What is the worst case time complexity of binary insertion sort algorithm to sort  $n$  elements?  
(a)  $O(n)$  .....  (b)  $O(n \log_2 n)$  .....   
(c)  $O(n^{1.2})$  .....  (d)  $O(n^2)$  .....
12. If each node in a tree has value greater than every value in its left subtree and has value less than every value in its right subtree, the tree is known as  
(a) complete tree .....  (b) full binary tree .....   
(c) binary search tree .....  (d) threaded tree .....
13. Which of the following sorting procedure is the slowest?  
(a) Quick sort .....  (b) Heap sort .....   
(c) Shell sort .....  (d) Bubble sort .....
14. A list of data items usually words or bytes, with the accessing restriction that elements can be added or removed at one end of the list only, is known as  
(a) stack .....  (b) memory .....   
(c) linked list .....  (d) heap .....
15. An undirected graph with  $n$  vertices and  $e$  edges are represented by Adjacency matrix. What is the time required to determine the degree of any vertex?  
(a)  $O(e)$  .....  (b)  $O(n)$  .....   
(c)  $O(n^2)$  .....  (d)  $O(e+n)$  .....
16. Which of the following statements is false?  
(a) Every tree is a bipartite graph .....   
(b) A tree contains a cycle .....   
(c) A tree with  $n$  nodes contains  $n-1$  edges .....   
(d) A tree is a connected graph .....
17. A graph  $G$  with  $n$  nodes is bipartite if it contains  
(a)  $n$  edges .....  (b) a cycle of odd length .....   
(c) no cycle of odd length .....  (d)  $n^2$  edges .....
18. In what tree, for every node the height of its left subtree and right subtree differ at least by one  
(a) binary search tree .....  (b) AVL-tree .....   
(c) complete tree .....  (d) threaded binary tree .....

19. A complete binary tree with the property that the value at each node is at least as large as the values at its children is known as
- (a) binary search tree .....  (b) AVL-tree .....   
(c) completely balanced tree .....  (d) heap .....
20. The time required to find shortest path in a graph with  $n$  vertices and  $e$  edges is
- (a)  $O(e)$  .....  (b)  $O(n)$  .....   
(c)  $O(e^2)$  .....  (d)  $O(n^2)$  .....
21. The goal of hashing is to produce a search that takes
- (a)  $O(1)$  time .....  (b)  $O(n^2)$  time .....   
(c)  $O(\log n)$  time .....  (d)  $O(n \log n)$  time .....
22. Which of the following best describes sorting?
- (a) Accessing and processing each record exactly once .....   
(b) Finding the location of the record with a given key .....   
(c) Arranging the data (record) in some given order .....   
(d) Adding a new record to the data structure .....
23. A sort which compares adjacent elements in a list and switches where necessary is a
- (a) insertion sort .....  (b) heap sort .....   
(c) quick sort .....  (d) bubble sort .....
24. A full binary tree with  $n$  leaves contains
- (a)  $n$  nodes .....  (b)  $\log_2 n$  nodes .....   
(c)  $2n-1$  nodes .....  (d)  $2^n$  nodes .....
25. A full binary tree with  $n$  non-leaf nodes contains
- (a)  $\log_2 n$  nodes .....  (b)  $n+1$  nodes .....   
(c)  $2n$  nodes .....  (d)  $2n+1$  nodes .....
26. A sort which uses the binary tree concept such that any number is larger than all the numbers in the subtree below it is called
- (a) selection sort .....  (b) insertion sort .....   
(c) heap sort .....  (d) quick sort .....
27. Which of the following sorting algorithms does not have a worst case running time  $O(n^2)$ ?
- (a) insertion sort .....  (b) merge sort .....   
(c) quick sort .....  (d) bubble sort .....

28. An instruction with an indexed operand having address field with all 0's bit is effectively a
- (a) register indirect mode of operation .....
  - (b) register direct mode of operation .....
  - (c) memory indirect mode of operation .....
  - (d) base-register addressing mode of operation .....
29. One of the most popular addressing schemes is Base-displacement addressing mode because it has the power of:
- (a) preindexed register indirect mode .....
  - (b) postindexed register indirect mode .....
  - (c) program relocatability .....
  - (d) addressing an  $N$ -word memory with an address field having length less than  $\log_2 N$  bits ..
  - (e) both (c) and (d) are true .....
30. In the following pair of addressing modes the first element refers to one having minimum operand fetching time and second one refers to the addressing mode with maximum operand fetching time; pick up the correct pair:
- (a) register direct and memory indirect ...       (b) immediate and indexed indirect .....
  - (c) register direct and indexed .....       (d) immediate and Base-displacement ....
  - (e) immediate and extended memory .....
31. In indirect index addressing mode using the index register having value  $X$  and address  $A$ , the effective operand address is:
- (a)  $(X + A)$  .....
  - (b) Content of memory location addressed by  $(X + A)$  .....
  - (c)  $X +$  content of memory location addressed by  $A$  .....
  - (d)  $A +$  content of memory location addressed by  $X$  .....
  - (e) None of the above is true .....
32. An instruction with two extended memory address operands using base register of length 12, number of operation codes 150, and 1M byte memory has a length of:
- (a) 32 .....       (b) 24 .....
  - (c) 16 .....       (d) 20 .....

33. Program size is likely to be minimum with

- (a) expanding op code .....
- (b) fixed length op code .....
- (c) data dependent op code .....
- (d) none of the above statements are valid .....

34. A database management system

- (a) allows simultaneous access to multiple files .....
- (b) can do more than a record management system .....
- (c) is a collection of programs for managing data in a single file .....
- (d) both (a) and (b) .....

35. An indexing operation

- (a) sorts a file using a single key .....       (b) sorts a file using two keys .....
- (c) establishes an index for a file .....       (d) both (b) and (c) .....

36. A logical schema

- (a) is the entire database .....
- (b) is a standard way of organizing information into accessible parts .....
- (c) describes how data is actually stored on disk .....
- (d) none of the above .....

37. Goals for the design of the logical schema include

- (a) avoiding data inconsistency .....       (b) being able to construct queries easily .....
- (c) being able to access data efficiently...       (d) all of the above .....

38. In a relational schema, each tuple is divided into fields called

- (a) Relations .....       (b) Domains .....
- (c) Queries .....       (d) none of the above .....

39. The data dictionary tells the DBMS

- (a) what files are in the database .....
- (b) what attributes are possessed by the data .....
- (c) what these files contain .....
- (d) all of the above .....

**40. Data integrity control**

- (a) is used to set upper and lower limits on numeric data .....
- (b) requires the use of passwords to prohibit unauthorized access to the file .....
- (c) has the data dictionary keep the data and time of last access .....
- (d) none of the above .....

**41. A locked file can be**

- (a) accessed by only one user .....
- (b) modified by users with the correct password .....
- (c) is used to hide sensitive information .....
- (d) both (b) and (c) .....

**42. A form defines**

- (a) where data is placed on the screen ...       (b) the width of each field .....
- (c) both (a) and (b) .....       (d) none of the above .....

**43. A form can be used to**

- (a) modify records .....       (b) delete records .....
- (c) format printed output .....       (d) all of the above .....

**44. In order to use a DBMS, it is important to understand**

- (a) the physical schema .....
- (b) all subschemas that the system supports .....
- (c) one subschema .....
- (d) both (a) and (b) .....

**45. A file manipulation command that extracts some of the records from a file is called**

- (a) SELECT .....       (b) PROJECT .....
- (c) JOIN .....       (d) none of the above .....

**46. If a piece of data is stored in two places in the database, then**

- (a) storage space is wasted .....
- (b) changing the data in one spot will cause data inconsistency .....
- (c) it can be more easily accessed .....
- (d) both (a) and (b) .....

47. A network schema

- (a) restricts the structure to a one-to-many relationship.....
- (b) permits many-to-many relationships .....
- (c) stores data in tables .....
- (d) none of the above .....

48. A relational schema for a train reservation database is given below

Passenger (pid, pname, age)

Reservation (pid, class, tid)

Table: **Passenger**

pid	pname	age
0	'Sachin'	65
1	'Rahul'	66
2	'Sourav'	67
3	'Anil'	69

Table: **Reservation**

pid	class	tid
0	'AC'	8200
1	'AC'	8201
2	'SC'	8201
5	'AC'	8203
1	'SC'	8204
3	'AC'	8202

What pids are returned by the following SQL query for the above instance of the tables?

```
SELECT pid
FROM Reservation
WHERE class = 'AC' AND
      EXISTS (SELECT *
              FROM Passenger
              WHERE age > 65 AND
                    Passenger.pid = Reservation.pid)
```

- (a) 1, 0 .....
- (b) 1, 2 .....
- (c) 1, 3 .....
- (d) 1, 5 .....

49. Degree to which software or a system is composed of discrete, independent components such that change in one component causes minimum change in other components is called

- (a) Portability .....
- (b) Self descriptiveness .....
- (c) Platform independence .....
- (d) Modularity .....

50. The ease with which software can be transferred from one environment to other environment is called

- (a) Portability .....
- (b) Cohesiveness .....
- (c) Platform independence .....
- (d) Modularity .....

51. Capability Maturity Model consists of

- (a) 2 levels .....
- (b) 3 levels .....
- (c) 4 levels .....
- (d) 5 levels .....



52. COCOMO model was proposed by

- |                 |                          |                             |                          |
|-----------------|--------------------------|-----------------------------|--------------------------|
| (a) Boehm ..... | <input type="checkbox"/> | (b) Albert & Gaffney .....  | <input type="checkbox"/> |
| (c) Codd .....  | <input type="checkbox"/> | (d) None of the above ..... | <input type="checkbox"/> |

53. Detailed design of software is tested using

- |                             |                          |                              |                          |
|-----------------------------|--------------------------|------------------------------|--------------------------|
| (a) Black box testing ..... | <input type="checkbox"/> | (b) Glass box testing .....  | <input type="checkbox"/> |
| (c) Both (a) and (b) .....  | <input type="checkbox"/> | (d) Functional testing ..... | <input type="checkbox"/> |

54. Most important feature of Spiral model is

- |                                |                          |                                    |                          |
|--------------------------------|--------------------------|------------------------------------|--------------------------|
| (a) Requirement analysis ..... | <input type="checkbox"/> | (b) Risk management .....          | <input type="checkbox"/> |
| (c) Quality management .....   | <input type="checkbox"/> | (d) Configuration management ..... | <input type="checkbox"/> |

55. Context diagram is also called

- |                       |                          |                       |                          |
|-----------------------|--------------------------|-----------------------|--------------------------|
| (a) level-0 DFD ..... | <input type="checkbox"/> | (b) level-1 DFD ..... | <input type="checkbox"/> |
| (c) level-2 DFD ..... | <input type="checkbox"/> | (d) level-3 DFD ..... | <input type="checkbox"/> |

56. Which one of the following is not a process model?

- |                           |                          |                   |                          |
|---------------------------|--------------------------|-------------------|--------------------------|
| (a) Spiral model .....    | <input type="checkbox"/> | (b) V model ..... | <input type="checkbox"/> |
| (c) Prototype model ..... | <input type="checkbox"/> | (d) CMM .....     | <input type="checkbox"/> |

57. The model which is used to evaluate the software process of an organization is called

- |                    |                          |                            |                          |
|--------------------|--------------------------|----------------------------|--------------------------|
| (a) CMM .....      | <input type="checkbox"/> | (b) SPICE .....            | <input type="checkbox"/> |
| (c) ISO 9001 ..... | <input type="checkbox"/> | (d) Both (a) and (b) ..... | <input type="checkbox"/> |

58. Acceptance testing is done by

- |                          |                          |                      |                          |
|--------------------------|--------------------------|----------------------|--------------------------|
| (a) System analyst ..... | <input type="checkbox"/> | (b) Programmer ..... | <input type="checkbox"/> |
| (c) User .....           | <input type="checkbox"/> | (d) Tester .....     | <input type="checkbox"/> |

59. No. of clauses used in ISO 9001 to specific quality system requirements are

- |              |                          |              |                          |
|--------------|--------------------------|--------------|--------------------------|
| (a) 15 ..... | <input type="checkbox"/> | (b) 20 ..... | <input type="checkbox"/> |
| (c) 25 ..... | <input type="checkbox"/> | (d) 27 ..... | <input type="checkbox"/> |

60. The Capability Maturity Model is based on the work of

- |                          |                          |                  |                          |
|--------------------------|--------------------------|------------------|--------------------------|
| (a) Watts Humphrey ..... | <input type="checkbox"/> | (b) Garvin ..... | <input type="checkbox"/> |
| (c) Booch .....          | <input type="checkbox"/> | (d) Boehm .....  | <input type="checkbox"/> |

61. The process by which the existing methods in an organization are replaced by new methods is called

- |                               |                          |   |                          |
|-------------------------------|--------------------------|---|--------------------------|
| (a) Reverse engineering ..... | <input type="checkbox"/> | (b) Business process re-engineering ..... | <input type="checkbox"/> |
| (c) Conceptual modeling ..... | <input type="checkbox"/> | (d) Technical feasibility .....           | <input type="checkbox"/> |

62. Data flows represent

- (a) Data at rest .....
- (b) Data in store .....
- (c) Data in motion .....
- (d) Data in repository .....

63. The flow of data between different processes is shown by

- (a) ER-diagram .....
- (b) Structure chart .....
- (c) Statechart diagram .....
- (d) Data flow diagram .....

64. Main concepts of ER model are

- (a) Entity and Relationship .....
- (b) Relationship, Primary key .....
- (c) Entity, Relationship and Attribute .....
- (d) None of above .....

65. Boehm has proposed

- (a) V model .....
- (b) Waterfall model .....
- (c) Prototyping process model .....
- (d) Spiral model .....

66. Which of the following is not used for configuration management auditing?

- (a) Critical path method .....
- (b) Gantt time allocation charts .....
- (c) PERT charts .....
- (d) Decision tables .....

67. The outcome of requirement analysis stage of software life cycle is

- (a) Quality assurance plan .....
- (b) Design document .....
- (c) Software requirements specification ..
- (d) Testing plan .....

68. Static view of an application domain can be modeled by

- (a) ER model .....
- (b) Data flow diagram .....
- (c) State transition diagram .....
- (d) Petri net .....

69. In basic COCOMO model effort for embedded systems is given by

- (a)  $3.6 * KDLOC^{1.20}$  .....
- (b)  $2.4 * KDLOC^{1.05}$  .....
- (c)  $3.0 * KDLOC^{1.12}$  .....
- (d) None of the above .....

70. Internal logic of a software system is tested through

- (a) Functional tests .....
- (b) Performance tests .....
- (c) Stress tests .....
- (d) Structure tests .....

71. Graphical representation of the project, showing each task activity as a horizontal bar whose length is proportion to time taken for completion of that activity is called

- (a) Gantt chart .....
- (b) PERT chart .....
- (c) Structure chart .....
- (d) Flow-chart .....

72. The property of sticking together of data-elements within a single module is called

- |                         |                          |                      |                          |
|-------------------------|--------------------------|----------------------|--------------------------|
| (a) Coupling .....      | <input type="checkbox"/> | (b) Cohesion .....   | <input type="checkbox"/> |
| (c) Decomposition ..... | <input type="checkbox"/> | (d) Modularity ..... | <input type="checkbox"/> |

73. UML stands for

- |                                     |                          |                                       |                          |
|-------------------------------------|--------------------------|---------------------------------------|--------------------------|
| (a) Unique modeling language .....  | <input type="checkbox"/> | (b) Universal modeling language ..... | <input type="checkbox"/> |
| (c) Unified modeling language ..... | <input type="checkbox"/> | (d) None of the above .....           | <input type="checkbox"/> |

74. Exchange of data between two modules in a structure chart is shown by

- |                       |                          |                         |                          |
|-----------------------|--------------------------|-------------------------|--------------------------|
| (a) Data couple ..... | <input type="checkbox"/> | (b) Flag .....          | <input type="checkbox"/> |
| (c) Condition .....   | <input type="checkbox"/> | (d) None of above ..... | <input type="checkbox"/> |

75. COCOMO II estimation model is based on

- |                                |                          |                                 |                          |
|--------------------------------|--------------------------|---------------------------------|--------------------------|
| (a) Algorithmic approach ..... | <input type="checkbox"/> | (b) Analog based approach ..... | <input type="checkbox"/> |
| (c) Bottom up approach .....   | <input type="checkbox"/> | (d) Both (b) and (c) .....      | <input type="checkbox"/> |

76. Halstead program volume measure is defined in terms of

- |                                   |                          |                                    |                          |
|-----------------------------------|--------------------------|------------------------------------|--------------------------|
| (a) Path of the program .....     | <input type="checkbox"/> | (b) Operators of the program ..... | <input type="checkbox"/> |
| (c) Operands of the program ..... | <input type="checkbox"/> | (d) Both (b) and (c) .....         | <input type="checkbox"/> |

77. ALPHA and BETA testing are forms of

- |                              |                          |                               |                          |
|------------------------------|--------------------------|-------------------------------|--------------------------|
| (a) Acceptance testing ..... | <input type="checkbox"/> | (b) Integration testing ..... | <input type="checkbox"/> |
| (c) System testing .....     | <input type="checkbox"/> | (d) None of the above .....   | <input type="checkbox"/> |

78. Testing the software means

- |  |                          |                             |                          |
|--|--------------------------|-----------------------------|--------------------------|
| (a) Verification only .....                | <input type="checkbox"/> | (b) Validation only .....   | <input type="checkbox"/> |
| (c) Both verification and validation ..... | <input type="checkbox"/> | (d) None of the above ..... | <input type="checkbox"/> |

79. If P is Risk probability, L is Loss, then Risk exposure (RE) is computed as

- |                      |                          |                        |                          |
|----------------------|--------------------------|------------------------|--------------------------|
| (a) $RE = P/L$ ..... | <input type="checkbox"/> | (b) $RE = P+L$ .....   | <input type="checkbox"/> |
| (c) $RE = P*L$ ..... | <input type="checkbox"/> | (d) $RE = P*L/2$ ..... | <input type="checkbox"/> |

80. Slack Time is computed in

- |                                    |                          |                                |                          |
|------------------------------------|--------------------------|--------------------------------|--------------------------|
| (a) Work breakdown structure ..... | <input type="checkbox"/> | (b) Critical path method ..... | <input type="checkbox"/> |
| (c) Gantt chart .....              | <input type="checkbox"/> | (d) All of the above .....     | <input type="checkbox"/> |

81. How many value can be held by an array  $A(-1 \dots m, 1 \dots m)$ ?

- |                    |                          |                    |                          |
|--------------------|--------------------------|--------------------|--------------------------|
| (a) $m$ .....      | <input type="checkbox"/> | (b) $m^2$ .....    | <input type="checkbox"/> |
| (c) $m(m+1)$ ..... | <input type="checkbox"/> | (d) $m(m+2)$ ..... | <input type="checkbox"/> |

82. Linked lists are not suitable for

- |                          |                          |                                   |                          |
|--------------------------|--------------------------|-----------------------------------|--------------------------|
| (a) Insertion sort ..... | <input type="checkbox"/> | (b) Binary search .....           | <input type="checkbox"/> |
| (c) Radix sort .....     | <input type="checkbox"/> | (d) Polynomial manipulation ..... | <input type="checkbox"/> |

83. In a circularly linked list organisation, insertion of a record involves the modification of

- |                      |                          |                      |                          |
|----------------------|--------------------------|----------------------|--------------------------|
| (a) no pointer ..... | <input type="checkbox"/> | (b) 1 pointer .....  | <input type="checkbox"/> |
| (c) 2 pointers ..... | <input type="checkbox"/> | (d) 3 pointers ..... | <input type="checkbox"/> |

84. Which is true about linked list?

- |   |                          |
|---|--------------------------|
| (a) A list is a dynamic data structure .....                        | <input type="checkbox"/> |
| (b) A list is a static data structure having variable storage ..... | <input type="checkbox"/> |
| (c) A stack can't be implemented by a linear linked list .....      | <input type="checkbox"/> |
| (d) Both (a) and (b) above .....                                    | <input type="checkbox"/> |

85. Maximum possible height of a AVL tree with 7 nodes is

- |             |                          |                         |                          |
|-------------|--------------------------|-------------------------|--------------------------|
| (a) 3 ..... | <input type="checkbox"/> | (b) 4 .....             | <input type="checkbox"/> |
| (c) 5 ..... | <input type="checkbox"/> | (d) none of these ..... | <input type="checkbox"/> |

86. A complete full binary tree with 10 leaves

- |  |                          |  |                          |
|--|--------------------------|--|--------------------------|
| (a) cannot have more than 19 nodes ..... | <input type="checkbox"/> | (b) has exactly 19 nodes .....           | <input type="checkbox"/> |
| (c) has exactly 17 nodes .....           | <input type="checkbox"/> | (d) cannot have more than 17 nodes ..... | <input type="checkbox"/> |

87. Number of possible binary trees with 3 nodes is

- |              |                          |              |                          |
|--------------|--------------------------|--------------|--------------------------|
| (a) 12 ..... | <input type="checkbox"/> | (b) 13 ..... | <input type="checkbox"/> |
| (c) 14 ..... | <input type="checkbox"/> | (d) 15 ..... | <input type="checkbox"/> |

88. Which of the following is correct?

- |  |                          |
|--|--------------------------|
| (a) $B$ -trees are storing data on disk and $B +$ trees are for main memory .....      | <input type="checkbox"/> |
| (b) range of queues are faster on $B +$ trees .....                                    | <input type="checkbox"/> |
| (c) $B$ -trees are for primary indexes and $B +$ trees are for secondary indexes ..... | <input type="checkbox"/> |
| (d) the height of $B +$ trees is independent of number of records .....                | <input type="checkbox"/> |

89. The time elapsed between the initiation of a memory operation and the completion of that operation is known as

- |                             |                          |                              |                          |
|-----------------------------|--------------------------|------------------------------|--------------------------|
| (a) memory cycle time ..... | <input type="checkbox"/> | (b) memory access time ..... | <input type="checkbox"/> |
| (c) transfer time .....     | <input type="checkbox"/> | (d) skip time .....          | <input type="checkbox"/> |

90. The desirable characteristic (s) of a memory system is (are)

- (a) speed and reliability .....  (b) low power consumption .....   
(c) durability and compactness .....  (d) all of the above .....

91. How many address lines are needed to address each memory location in a  $2048 \times 4$  memory chip?

- (a) 10 .....  (b) 11 .....   
(c) 8 .....  (d) 12 .....

92. The control unit of a microprocessor

- (a) stores data in the memory .....   
(b) accepts input data from a keyboard .....   
(c) performs arithmetic/logic functions .....   
(d) none of the above. ....

93. Which of the following registers is used to keep track of address of the memory location where the next instruction is located?

- (a) Memory Address Register .....  (b) Memory Data Register .....   
(c) Instruction Register .....  (d) Program Counter .....

94. Which of the following registers is loaded with the contents of the memory location pointed by the PC?

- (a) Memory Address Register .....  (b) Memory Data Register .....   
(c) Instruction Register .....  (d) Program Counter .....

95. Registers which are partially visible to users and used to hold conditional codes (bits set by the CPU hardware as the result of operations), are known as

- (a) PC .....  (b) Memory Address Registers .....   
(c) General purpose registers .....  (d) Flags .....

96. Booth's multiplication algorithm generates correct product with negative multiplier without any correction step because

- (a) multiplier is considered as a positive number .....   
(b) multiplicand is added with  $(n - 1)$  left shift corresponding to the sign bit of multiplier .....   
(c) multiplicand is subtracted corresponding to the first 1 in the most leading run of consecutive 1's .....   
(d) multiplicand is subtracted with  $(n - 1)$  left shift corresponding to the sign bit of multiplier .....

97. If some device requires urgent service, normal execution of programs may sometimes be preempted using

- (a) an interrupt signal .....
- (b) a request to memory modules .....
- (c) DMA .....
- (d) all of the above .....

98. The user microprogramming feature enables the designer to

- (a) design the microprogrammed controller .....
- (b) write his own code .....
- (c) redefine the microprogram stored in the control ROM .....
- (d) none of the above statements is true .....

99. A CPU handles **interrupt** by executing interrupt service routine

- (a) whenever an interrupt is registered .....
- (b) by checking interrupt register at the end of fetch cycle .....
- (c) by checking interrupt register after execution of each instruction .....
- (d) by checking interrupt register at regular time interval. ....

100. The **software interrupt** is a convenient means to

- (a) transfer CPU control from one program to another .....
- (b) switch over from problem state to supervisory state of CPU .....
- (c) execute a hardware controlled jump under an abnormal (but known) situation .....
- (d) both (b) and (c) are valid .....
- (e) none of the above statements is true. ....

101. A microprogram sequencer

- (a) enables efficient handling of microprogram subroutines .....
- (b) helps appropriate encoding and decoding of control signals in control memory .....
- (c) controls the generation of effective address for the control ROM .....
- (d) handles the task of next address generation in a microprogrammed control structure .....

102. The access method used for magnetic tape is

- (a) Direct .....
- (b) Random .....
- (c) Sequential .....
- (d) None of the above .....

103. By Processing we understand

- (a) Processing string of only words .....
- (b) None of the above .....
- (c) String manipulation only .....
- (d) Processing string of numbers and special symbols .....

104. The difference between memory and storage is that the memory is \_\_\_\_\_ and storage is \_\_\_\_\_

- (a) Temporary, permanent .....       (b) Permanent, temporary .....
- (c) Slow, fast .....       (d) None of the above .....

105. Which of the Following holds the ROM, CPU, RAM and expansion cards?

- (a) Hard disk .....       (b) Floppy disk .....
- (c) Mother board .....       (d) None of the above .....

106. Which of the following devices can be used to directly input printed text?

- (a) OCR .....       (b) OMR .....
- (c) MICR .....       (d) None of the above .....

107. A floppy disk contains

- (a) Circular tracks only .....       (b) Sectors only .....
- (c) Both circular tracks and sectors .....       (d) None of the above .....

108. CD-ROM is a

- (a) Semiconductor memory .....       (b) Memory register .....
- (c) Magnetic memory .....       (d) None of the above .....

109. Actual execution of instructions in a computer takes place in

- (a) ALU .....       (b) Control Unit .....
- (c) Storage unit .....       (d) None of the above .....

110. Information retrieval is faster from

- (a) Floppy disk .....       (b) Magnetic tape .....
- (c) Hard disk .....       (d) None of the above .....

111. Operating system is

- (a) A collection of hardware components .....       (b) A collection of software routines .....
- (c) A collection of input-output devices ..       (d) none of the above .....

**112. Operating system**

- (a) Links a program with the subroutines it references.....
- (b) Provides a layered, user-friendly interface.....
- (c) Enables a programmer to draw a flowchart.....
- (d) None of the above.....

**113. Execution of two or more programs by a single CPU is known as**

- (a) Multiprocessing.....
- (b) Time sharing.....
- (c) Multiprogramming.....
- (d) None of the above.....

**114. Indicate which of the following, best describes the term “software”**

- (a) systems programs only.....
- (b) Application programs only.....
- (c) Both (a) and (b).....
- (d) None of the above.....

**115. A translator is best described as**

- (a) An Application software.....
- (b) A system software.....
- (c) A hardware component.....
- (d) None of the above.....

**116. Indicate which of the following is not true about an interpreter**

- (a) Interpreter generates an object program from the source program.....
- (b) Interpreter is a kind of translator.....
- (c) Interpreter analyses each source statement every time it is to be executed.....
- (d) None of the above.....

**117. C is**

- (a) An assembly language.....
- (b) A third generation high level language.....
- (c) A machine language.....
- (d) None of the above.....

**118. A graph prepared by a computer**

- (a) is its output.....
- (b) is the piece of information to use.....
- (c) is a hard copy.....
- (d) all of the above.....

**119. Which of the following does not represent on I/O device?**

- (a) speaker which beeps.....
- (b) joystick.....
- (c) plotter.....
- (d) ALU.....

**120. The communication line between the CPU, memory and peripherals is called a**

- (a) bus.....
- (b) line.....
- (c) media.....
- (d) none of these.....



121. Memories which can be read only are called \_\_\_\_\_ memories

- |                |                          |                 |                          |
|----------------|--------------------------|-----------------|--------------------------|
| (a) RAM .....  | <input type="checkbox"/> | (b) ROM .....   | <input type="checkbox"/> |
| (c) PROM ..... | <input type="checkbox"/> | (d) EPROM ..... | <input type="checkbox"/> |

122. Example of non-numerical data is

- |                            |                          |                             |                          |
|----------------------------|--------------------------|-----------------------------|--------------------------|
| (a) Employee address ..... | <input type="checkbox"/> | (b) Examination score ..... | <input type="checkbox"/> |
| (c) Bank balance .....     | <input type="checkbox"/> | (d) None of the above ..... | <input type="checkbox"/> |

123. Which of the following holds the ROM, CPU, RAM and expansion cards?

- |                        |                          |                             |                          |
|------------------------|--------------------------|-----------------------------|--------------------------|
| (a) Hard disk .....    | <input type="checkbox"/> | (b) Cache memory .....      | <input type="checkbox"/> |
| (c) Mother board ..... | <input type="checkbox"/> | (d) None of the above ..... | <input type="checkbox"/> |

124. A Winchester disk is a

- |                         |                          |                             |                          |
|-------------------------|--------------------------|-----------------------------|--------------------------|
| (a) Disk stack .....    | <input type="checkbox"/> | (b) Removable disk .....    | <input type="checkbox"/> |
| (c) Flexible disk ..... | <input type="checkbox"/> | (d) None of the above ..... | <input type="checkbox"/> |

125. The Central Processing Unit

- |   |                          |
|---|--------------------------|
| (a) is operated from the control panel .....                  | <input type="checkbox"/> |
| (b) is controlled by the input data entering the system ..... | <input type="checkbox"/> |
| (c) controls the auxiliary storage unit .....                 | <input type="checkbox"/> |
| (d) controls all input, output and processing .....           | <input type="checkbox"/> |

126. Computer follows a simple principle called GIGO which means:

- |   |                          |                                  |                          |
|---|--------------------------|----------------------------------|--------------------------|
| (a) garbage input good output .....       | <input type="checkbox"/> | (b) garbage in garbage out ..... | <input type="checkbox"/> |
| (c) great instructions great output ..... | <input type="checkbox"/> | (d) good input good output ..... | <input type="checkbox"/> |

127. The term 'baud' is a measure of the

- |   |                          |
|---|--------------------------|
| (a) speed at which data travels over the communication line ..... | <input type="checkbox"/> |
| (b) memory capacity .....   | <input type="checkbox"/> |
| (c) instruction execution time .....                              | <input type="checkbox"/> |
| (d) all of the above .....  | <input type="checkbox"/> |

128. Pick out the wrong definition

- |  |                          |
|--|--------------------------|
| (a) Access time – time needed to access the output .....       | <input type="checkbox"/> |
| (b) EDP- acronym for Electronic Data Processing .....          | <input type="checkbox"/> |
| (c) COBOL – a language used for business data processing ..... | <input type="checkbox"/> |
| (d) Control unit – heart of a computer .....                   | <input type="checkbox"/> |

129. Terminal is a

- (a) device to give power supply to computer .....
- (b) point at which data enters or leaves the computer .....
- (c) the last instruction in a program .....
- (d) any input /output device .....

130. \_\_\_\_\_ is used to create Large program on internet

- (a) C++ .....  (b) HTML .....
- (c) C language .....  (d) Java script .....

131. The Device which converts instructions into the binary form that is understood by the computer and supply to the computer is known as \_\_\_\_\_

- (a) Input .....  (b) Output .....
- (c) Automatic .....  (d) Memory .....

132. Laptop PCs are also known as \_\_\_\_\_ Computers

- (a) Mainframe .....  (b) Super .....
- (c) Notebook .....  (d) personal .....

133. Modem stands for

- (a) A type of secondary memory .....  (b) Modulator demodulator .....
- (c) Mainframe operating device memory.  (d) None of the above .....

134. Bug means

- (a) A logical error in a program .....
- (b) Documenting programs using an efficient documentation too .....
- (c) A difficult syntax error in a program .....
- (d) None of the above .....

135. The part of machine level instruction, which tells the central processor what was to be done is

- (a) Operation code .....  (b) Address .....
- (c) Operand .....  (d) None of the above .....

136. Indicate which of the following is not true about 4GL.

- (a) 4GL does not support a high –level of screen interaction .....
- (b) Many database management system packages support 4GLs .....
- (c) A 4GL is a software tool which is written, possibly, in some third generation language .....
- (d) None of the above .....

137. One thousand bytes represent a

- (a) Megabyte .....  (b) Gigabyte .....   
(c) Kilobyte .....  (d) None of the above .....

138. A step by step procedure used to solve a problem is called

- (a) Operating system .....  (b) Algorithm .....   
(c) Application Program .....  (d) None of the above .....

139. A computer can be defined as an electronic device that can (choose the most precise definition)

- (a) carry out arithmetical operation .....   
(b) carry out logical function .....   
(c) accept and process data using a set of stored instructions .....   
(d) present information on a VDU .....

140. A bootstrap is

- (a) a memory device .....   
(b) a device to support the computer .....   
(c) a small initialisation program to start up a computer .....   
(d) an error correction technique .....

141. A “data structure” which displays the relationship of adjacency between elements is said to be

- (a) parallel .....  (b) linear .....   
(c) transverse .....  (d) congruent .....

142. The elements of the Array are stored respectively in successive

- (a) memory locations .....  (b) FAT .....   
(c) sequenced array .....  (d) None of these .....

143. Elements of any Multi-dimensional Array can be stored in two forms \_\_\_\_\_ and \_\_\_\_\_

- (a) parallel .....  (b) direct .....   
(c) row major .....  (d) column major .....

144. The length of the list ((5, 6), 0, (9, 6, 3, 5)) is

- (a) 2 .....  (b) 4 .....   
(c) 3 .....  (d) 5 .....

145. The length of the list A = (a, A, a) is

- (a) infinite .....  (b) finite .....   
(c) sequential .....  (d) None of these .....

146. There are minimum \_\_\_\_\_ pointers associated with each node in a deque.

- (a) 1 .....  (b) 2 .....   
(c) 3 .....  (d) 4 .....

147. The maximum number of nodes on 6<sup>th</sup> level of a binary tree is

- (a) 14 .....  (b) 15 .....   
(c) 16 .....  (d) 17 .....

148. Nodes that have degree \_\_\_\_\_ is called leaf or Terminal nodes.

- (a) 0 .....  (b) 1 .....   
(c) 2 .....  (d) 3 .....

149. A complete binary tree is said to satisfy the 'heap condition' if the key of each node is \_\_\_\_\_ to the key in its children.

- (a) less than .....  (b) greater than .....   
(c) greater than or equal to .....  (d) less than or equal to .....

150. The order of selection sort comes out to be of

- (a)  $O(n^2)$  .....  (b)  $O(n^{-2})$  .....   
(c)  $O(n^3)$  .....  (d)  $O(n^{10})$  .....

\* \* \* \* \*