LD/723   **2012**   Series **C**

COMPUTER SCIENCE

Paper - II

Time : 150 Minutes   *Max. Marks : 300*

INSTRUCTIONS

1. Please check the Test Booklet and ensure that it contains all the questions. If you find any defect in the Test Booklet or Answer Sheet, please get it replaced immediately.

2. The Test Booklet contains **150** questions. Each question carries **two marks**.

3. The Test Booklet is printed in four (4) Series, viz. [A][B][C][D]. The Series, [A] or [B] or [C] or [D] is printed on the right-hand corner of the cover page of the Test Booklet. Mark your Test Booklet Series [A] or [B] or [C] or [D] in Part C on side 1 of the Answer Sheet by darkening the appropriate circle with Blue/Black Ball point pen.

Example to fill up the Booklet Series

If your Test Booklet Series is **A**, please fill as shown below :

● Ⓑ Ⓒ Ⓓ
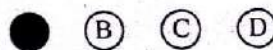
If you have not marked the Test Booklet Series at Part C of side 1 of the Answer Sheet or marked in a way that it leads to discrepancy in determining the exact Test Booklet Series, then, in all such cases, your Answer Sheet will be invalidated without any further notice. No correspondence will be entertained in the matter.

4. Each question is followed by 4 answer choices. Of these, you have to select one correct answer and mark it on the Answer Sheet by darkening the appropriate circle for the question. If more than one circle is darkened, the answer will not be valued at all. Use Blue/Black Ball point pen to make heavy black marks to fill the circle completely. Make **no** other stray marks.

e.g. : If the answer for Question No. 1 is Answer choice (2), it should be marked as follows :

1 | ① | ● | ③ | ④

5. Mark Paper Code and Roll No. as given in the Hall Ticket with Blue/Black Ball point pen by darkening appropriate circles in Part A of side 1 of the Answer Sheet. Incorrect/not encoding will lead to *invalidation* of your Answer Sheet.

Example : If the Paper Code is **027**, and Roll No. is **95640376** fill as shown below :

Paper Code

0	2	7
●	⓪	⓪
①	①	①
②	●	②
③	③	③
④	④	④
⑤	⑤	⑤
⑥	⑥	⑥
⑦	⑦	●
⑧	⑧	⑧
⑨	⑨	⑨

Roll No.

9	5	6	4	0	3	7	6
⓪	⓪	⓪	⓪	●	⓪	⓪	⓪
①	①	①	①	①	①	①	①
②	②	②	②	②	②	②	②
③	③	③	③	③	●	③	③
④	④	④	●	④	④	④	④
⑤	●	⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	●	⑥	⑥	⑥	⑥	●
⑦	⑦	⑦	⑦	⑦	⑦	●	⑦
⑧	⑧	⑧	⑧	⑧	⑧	⑧	⑧
●	⑨	⑨	⑨	⑨	⑨	⑨	⑨

6. Please get the signature of the Invigilator affixed in the space provided in the Answer Sheet. An Answer Sheet without the signature of the Invigilator is liable for *invalidation*.

7. The candidate should **not** do rough work or write any irrelevant matter in the Answer Sheet. Doing so will lead to *invalidation*.

8. Do **not** mark answer choices on the Test Booklet. Violation of this will be viewed seriously.

9. Before leaving the examination hall, the candidate should hand over the original OMR Answer Sheet (top sheet) to the Invigilator and carry the bottom sheet (duplicate) for his/her record, failing which disciplinary action will be taken.

10. Use of whitener is prohibited. If used, the answer sheet is liable for invalidation.

1. The storage place that holds data and instruction temporarily within CPU is
   (1) Accumulator
   (2) Bus
   (3) Register
   (4) Addresses

2. Which of the following supports the concept of multiple inheritance?
   (1) C++
   (2) Java
   (3) Both C++ and Java
   (4) None

3. Which of the following statements is false?
   (1) A tree contains a cycle
   (2) Every tree is a graph
   (3) A tree with N nodes contain N-1 edges
   (4) All the above

4. Match the following typical example-problems with suitable algorithm-design paradigms
   A : Minimal Spanning Tree
   B : Binary Search Algorithm
   C : Depth-First Search
   D : Optimization
   I : Divide and Conquer
   II : Greedy Method
   III : NLP
   IV : Backtracking
   (1) A-II, B-I, C-IV, D-III
   (2) A-III, B-II, C-IV, D-I
   (3) A-III, B-I, C-IV, D-II
   (4) A-IV, B-I, C-II, D-III

5. What is the output of the following Pascal program segment?

   ```
   {c: array [1..10] of integer;
       m, n, temp : integer;

       procedure r (k, j : integer)
       begin
            k :=k+1; j :=j+2;
       end r;
       ...
       m :=5; n := 3;
       r(m, n)
       temp:=m; m:=n; n:=temp;
       write m, n;
   }
   ```
   (1) 3, 5
   (2) 5, 3
   (3) either 3, 5 or 5, 3
   (4) Unpredictable

6. Which of the following statements is false?
   (1) An unambiguous grammer has the same leftmost and rightmost derivation
   (2) An LL(1) parser is atop-down parser
   (3) LALR is more powerful than SLR
   (4) An unambiguous grammer can never be LR(k) for any k

7. With respect to paging, which of the following is false
   (1) It is based on linear logical memory addressing concept
   (2) Entire program need not be loaded into memory before execution
   (3) It suffers from both internal and external fragmentations
   (4) Page table is not required once a program is loaded

8. Relation R with an associated set of functional dependencies F is decomposed into BCNF. The redundancy (arising out of functional dependencies) in the resulting set of relations is

   (1) Zero

   (2) More than Zero but less than that of an equivalent 3NF

   (3) Proportional to the size of F^+

   (4) Indeterminate

9. A wire frame model is

   (1) Visual presentation of an electronic representation of a 3D physical object

   (2) Exploits hidden line removal via cutting planes

   (3) Allows visualization of the underlying design structure of a 3D model

   (4) All the above

10. In which layer of the OSI model, DBMS and email software are found

   (1) Presentation Layer

   (2) Transport layer

   (3) Application Layer

   (4) Sessions layer

11. The consistency model supported in IVY (Integrated shared virtual memory at yale) is

   (1) Sequential Consistency

   (2) General Consistency

   (3) Strict Consistency

   (4) Weak Consistency

12. ————— is the assurance that the application will perform its intended function with the required precision over an extended period of time

   (1) Compatibility

   (2) Reliability

   (3) Maintainability

   (4) Portability

13. Which sorting method is best suited for external sorting?

   (1) Quick Sort

   (2) Heap Sort

   (3) Merge sort

   (4) All the above

14. Which of the following is a symmetric key algorithm?

   (1) Blowfish

   (2) IDEA

   (3) AES

   (4) All the above

15. Which of the following is a random access (primary) memory?

(1) Disk

(2) Tape

(3) ROM

(4) None

16. The main difference between a CISC and a RISC processor is/are that a RISC processor typically has

(1) Has fewer instructions and addressing modes

(2) Has more registers

(3) Easy to implement using hard-wired control logic

(4) All of the above

17. What is the proper way of defining a class named A so that it cannot be subclassed?

(1) class A { }

(2) abstract final class A { }

(3) class A {final;}

(4) final class A { }

18. BFS uses the following data structure to hold nodes that are waiting to be processed

(1) Queue

(2) Stack

(3) File

(4) All the above

19. Which of the following is not a right paradigm for solving the 0/1-knapsack problem?

(1) Dynamic Programming

(2) Branch and Bound

(3) Greedy Approximation

(4) Divide and Conquer

20. _____ is the enforcement of a clear separation between the abstract properties of a data type and the concrete details of its implementation.

(1) Control Abstraction

(2) Data Abstraction

(3) Abstract Data Type (ADT)

(4) None of the above

21. Type checking is normally done during

(1) Lexical Analysis

(2) Syntax-directed Translation

(3) Syntax Analysis

(4) Code Optimization

22. System call is a

(1) A mechanism used by a program to request service from the OS

(2) A mechanism used by a programmer to request service from the administrator

(3) A mechanism used by a programmer to request service from the I/O devices

(4) All the above

23. Consider a schema R(A, B, C, D) and functional dependencies $A \rightarrow B$ and $C \rightarrow D$. Then the decomposition of R into R1(A B) and R2(C D) is

    (1) Dependency preserving and lossless Join

    (2) Lossless Join but not dependency preserving

    (3) Dependency preserving but not lossless Join

    (4) Not dependency preserving and not lossless Join

24. The equations used to describe curves are referred as

    (1) DDA

    (2) Spline

    (3) Matrix equation

    (4) None

25. Which of the following are regarded as WAN protocols?

    (1) Frame Relay

    (2) SLIP

    (3) IEEE 802.6

    (4) X.25

26. In Client-Server architecture caching at server-side is done to avoid the delay due to

    (1) Disk latency

    (2) Network latency

    (3) Both disk and network latency

    (4) None of the above

27. ———— testing is a software testing technique that uses a combination of black box testing and white box testing.

    (1) Green box

    (2) Blue box

    (3) Grey box

    (4) All the above

28. Ensuring the quality of service requested is the responsibility of

    (1) Network Layer

    (2) Transport Layer

    (3) Presentation Layer

    (4) Sessions Layer

29. A firewall is a

    (1) Software

    (2) Hardware

    (3) Software or Hardware

    (4) Neither Software nor Hardware

30. Which of the following results in fastest access?

    (1) Compact Disc (CD)

    (2) Hard Disk

    (3) Registers

    (4) All the above

31. Interrupt-driven I/O is a type of I/O transfer that

    (1) Relies on hardware only

    (2) Relies on software only

    (3) Relies on both software and hardware

    (4) Relies on neither hardware nor software

32. Ad hoc polymorphism in Java is manifested in

    (1) Coercion

    (2) Overloading and overriding

    (3) Hiding and abstract methods

    (4) All of the above

33. The data structure that is used to implement recursion is

    (1) Stack

    (2) Binary Tree

    (3) Queue

    (4) All of the above

34. Eight-queens problem can be solved by

    (1) Brute Force Method

    (2) Backtracking

    (3) Breadth-First Search

    (4) All the above

35. ADT means

    (1) Specification of a set of data

    (2) Specification of a set of operations

    (3) Specification of a set of data with its set of operations defined

    (4) All the above

36. A linker is given object modules for a set of programs that were compiled separately. What information need not be included in an object module?

    (1) Object Code

    (2) Relocation Bits

    (3) Names and locations of all external symbols defined in the object module

    (4) Absolute address of internal symbols

37. Critical Section Problem (CSP) refers

(1) Sharing of sharable resources

(2) Sharing of non-sharable resources

(3) Sharing of both sharable and non-sharable resources

(4) No sharing of resources

38. Examples of transaction systems are

(1) Banking

(2) Railway Ticket Booking

(3) Stock Trading

(4) All the above

39. The main disadvantage of DDA Line drawing algorithm is

(1) It has exponential time complexity

(2) It requires floating-point arithmetic operations

(3) Both (1) and (2)

(4) None of the above

40. 10BASE2 uses ——————— cable while 10BASE5 uses ——————— cable

(1) Thick Coaxial, Thin Coaxial

(2) Thin Coaxial, Thick Coaxial

(3) UTP, Coaxial

(4) Coaxial, Fibre-optic

41. What is a sender in the context of distributed scheduling?

(1) A heavily loaded node

(2) A lightly loaded node

(3) A node without any load

(4) Both (2) and (3)

42. Equivalence partitioning is

(1) A black box testing technique used only by developers

(2) A black box testing technique that can only be used during system testing

(3) A black box testing technique appropriate to all levels of testing

(4) A while box testing technique appropriate for component testing

43. Which of the following is not a UML diagram?

    (1) Class Diagram

    (2) Use-Case Diagram

    (3) Process State (Transition) Diagram

    (4) Interaction Diagrams

44. Which of the following is true?

    (1) Intrusion detection is the act of detecting actions that attempt to compromise the security requirements of a resource

    (2) Intrusion detection does not, in general, include prevention of intrusions

    (3) Intrusion prevention is an evolution of intrusion detection

    (4) All the above

45. Which of the following is an interactive graphical input device?

    (1) Keyboard

    (2) Mouse

    (3) Monitor

    (4) All the above

46. Keyboard operation is based ———— principles

    (1) Electromagnetic

    (2) Photoelectronic

    (3) Electromechanical

    (4) None of the above

47. In software engineering KLOC means

    (1) A metric to express cohesion

    (2) A metric to express coupling

    (3) Thousands of lines of code

    (4) All the above

48. In the context of Operating Systems, a privileged instruction can be executed by the

    (1) Process on behalf of the Kernel

    (2) Kernel on behalf of the requesting process

    (3) Either (1) or (2)

    (4) Both (1) and (2)

49. Which of these can be successfully tested using Loop Testing Methodology?

    (1)   Simple Loops

    (2)   Nested Loops

    (3)   Concatenated Loops

    (4)   All of the above

50. In the context of distributing scheduling, non-preemptive task transfers are also called

    (1)   Primitive Task Transfer

    (2)   Task Placement

    (3)   Task Migration

    (4)   All the above

51. Dialogue control is the function of ———— layer of OSI model

    (1)   Presentation Layer

    (2)   Transport Layer

    (3)   Sessions Layer

    (4)   Application Layer

52. ———— deals with establishing physically correct quantitative relationships between real systems and models of those real systems

    (1)   Simulation

    (2)   Modeling

    (3)   Simulation and modeling

    (4)   None of the above

53. A directed graph which represent the deadlock is called

    (1)   Cyclic Graph

    (2)   Wait-for-Graph

    (3)   Deadlock Grpah

    (4)   Deadlock Detection Graph

54. Which of the following is not a solution to CSP?

    (1)   Semaphore

    (2)   Monitor

    (3)   Access Matrix

    (4)   Critical Region

55. Access time of the symbol table will be logarithmic, if it is implemented by

(1) Linear List

(2) Hash Table

(3) Search Tree

(4) Self-Organization List

56. Logic Programming is the

(1) Use of mathematical logic for computer programming

(2) Use of computer programming for mathematical logic

(3) Both (1) and (2)

(4) Neither (1) nor (2)

57. Technique often used in game tree search algorithms through the use of alpha-beta pruning, is

(1) Dynamic Programming

(2) Branch and Bound

(3) Greedy Approximation

(4) Divide and Conquer

58. A famous quote of Niklaus Wirth states: *Algorithm + Data Structure = ?*

(1) Source Code

(2) Program

(3) Software

(4) Programming Language

59. Which of the following is false with respect to Java Bytecode?

(1) Bytecodes are the machine language of the Java Virtual Machine (JVM)

(2) They can be executed by interpretation, OR just-in-time compiling

(3) The bytecodes streams are stored in the method area of the JVM

(4) None of the above

60. Which of the following devices should get higher priority in assigning Interrupts?

(1) Hard disk

(2) Floppy Disk

(3) Printer

(4) Keyboard

61. The most appropriate matching for the following pairs is
    - X : Indirect Addressing
    - Y : Immediate Addressing
    - Z : Autodecrement Addressing
    - I : Loops
    - II : Pointers
    - III : Constants
    - (1) X-III, Y-II, Z-I
    - (2) X-I, Y-III, Z-II
    - (3) X-II, Y-III, Z-I
    - (4) X-III, Y-I, Z-II

62. Which of the following is true with respect to Java?
    - (1) Abstract classes cannot be subclassed, but they can be instantiated
    - (2) Abstract classes cannot be instantiated; besides cannot be subclassed
    - (3) Abstract classes cannot be instantiated, but they can be subclassed
    - (4) None of the above

63. The infix form of prefix expression *+abc is
    - (1) a+b*c
    - (2) (a+b)*c
    - (3) a* (b+c)
    - (4) None of the above

64. Which of the following is a right paradigm for solving the popular (Chinese) Sudoku problem?
    - (1) Backtracking
    - (2) Branch and Bound
    - (3) Dynamic Programming
    - (4) None of the above

65. Which of the following Bernstein's conditions is false? Given two statements S1 and S2; and their read and write sets
    - (1) $R(S1) \cap W(S2) = \{\}$
    - (2) $W(S1) \cap R(S2) = \{\}$
    - (3) $R(S1) \cap R(S2) = \{\}$
    - (4) $W(S1) \cap W(S2) = \{\}$

66. Heap allocation is required for languages
    - (1) That support recursion
    - (2) That support dynamic data structures
    - (3) That use dynamic scope rules
    - (4) None

67. Thrashing is
    - (1) A mechanism used by OS to boost its performance
    - (2) A phenomenon where CPU utilization is very poor
    - (3) A concept to improve CPU utilization
    - (4) None

68. B+ –trees are preferred to binary trees in databases because

(1) Disk capacities are greater than memory capacities

(2) Disk access is much slower than memory access

(3) Disk data transfer rates are much less than memory data transfer rates

(4) Disks are more reliable than memory

69. The most commonly used methods of representing curved surfaces in computing

(1) Bezier Surfaces

(2) B-spline Surfaces

(3) Both (1) and (2)

(4) None

70. Early Ethernet implementations, up to and including 10Base-T, all used the _____ encoding data method

(1) Polar Encoding

(2) Differential Manchester encoding

(3) Manchester encoding

(4) NRZ

71. Which of the following is a stateful server?

(1) Internet Information Server (IIS)

(2) SUN NFS Server

(3) SFS Server

(4) All the above

72. Which of the following is a model of Software Development Life Cycle?

(1) Waterfall Model

(2) Chaos Model

(3) Spiral Model

(4) All the above

73. Which of the following can be used as a load metric in distributed environment?

(1) Queue Length

(2) CPU Utilization

(3) Both (1) and (2)

(4) None

74. Which of the following is false with respect to a VPN?

(1) Stands for Virtual Private Network

(2) Provides secure communications through the public Internet

(3) VPN need to have explicit security features, such as authentication or content encryption

(4) Can be used to separate the traffic of different user communities over an underlying network with strong security features

75. Which of the following is a auxiliary strong device?
    (1) Tape
    (2) Disk
    (3) Pen Drive (Memory Stick)
    (4) All the above

76. The average seek time can be reduced in a hard disk drive if
    (1) The speed of the motor used for arm movement is increased
    (2) The recording density is increased
    (3) The number of surfaces of the hard disk is increased
    (4) The number of cylinders of the hard disk is reduced

77. Consider the following two classes in Java:
    Public class ClassA {
        public void methodOne (int i) {
        }
        public void methodTwo(int i) {
        }
        public static void methodThree(int i) {
        }
        public static void methodFour(int i) {
        }
    }
    Public class ClassB extends ClassA {
        public static void methodOne(int i) {
        }
        public void methodTwo(int i) {
        }
        public void methodThree(int i) {
        }
        public static void methodFour(int i) {
        }
    }
    Which method hides a method in the superclass?
    (1) methodTwo
    (2) methodFour
    (3) methodThree
    (4) methodOne

78. Which of the following traversal technique lists the nodes of a binary search tree in an ascending order?
    (1) Preorder
    (2) Inordrer
    (3) Postorder
    (4) All the above

79. Which of the following is not a NP-hard problem?
    (1) Maximum Satisfiability Problem
    (2) Traveling Salesman Problem
    (3) Minimal Spanning Tree
    (4) Knapsack Problem

80. Which of the following statement is true with respect to exception handling?
    (1) Errors in the design/implementation process can be corrected
    (2) Errors in the source program can be corrected
    (3) Potential run time errors can be corrected
    (4) All the above

81. The process of assigning load address to the various parts of the program; and adjusting the code and data in the program to reflect the assigned addresses is called
    (1) Assembly
    (2) Parsing
    (3) Relocation
    (4) Symbol Resolution

82. A page table is maintained partially in cache memory with a hit ratio of 80%. Give the following, what is the Effective Access Time.
    Cache lookup takes 5 nanosec and memory access time is 100 nanosec.
    (1) 45 nanosec
    (2) 125 nanosec
    (3) 25 nanosec
    (4) 105 nanosec

83. The two phase commit (2PC) protocol is resilient to

   (1) Deadlock

   (2) Site and link failures

   (3) Dependencies

   (4) Starving

84. Memory of graphics card integrated into the motherboard is called

   (1) RAM

   (2) Display Memory

   (3) Framebuffer

   (4) Both (2) and (3)

85. The function of *network layer* of OSI model

   (1) Packet Routing

   (2) Congestion Control

   (3) Internetworking

   (4) All of these

86. Name of the data structure maintained by a Distributed File System (DFS) to map the mount points to appropriate storage devices

   (1) Page Table

   (2) Mount Table

   (3) Mount Tree

   (4) Mount List

87. Which of the following is not a characteristic for Testability?

   (1) Robustness

   (2) Simplicity

   (3) Observability

   (4) Operability

88. Monitor in Computer Science stands for

   (1) Monitor and keyboard

   (2) Name coined for early Operating System

   (3) A solution for Critical Section Problem (CSP)

   (4) All the above

89. Which of the following is a security requirement?

   (1) Confidentiality and Integrity

   (2) Authentication

   (3) Non-repudiation

   (4) All the above

90. In Computer Science jargon, kilo means _____

   (1) 1000

   (2) 2^{10}

   (3) 1024

   (4) Both (2) and (3)

91. Which of the following is true with respect to interrupts?

    (1) Unless enabled, a CPU will not be able to process interrupts

    (2) Loop instructions can not be interrupted till they complete

    (3) A processor checks for interrupts before executing a new instruction

    (4) Only level-triggered interrupts are possible on microprocessor

92. Overloaded functions

    (1) Are a group of functions with the same name

    (2) All have the same number and types of arguments

    (3) May fail expectedly due to many functions with the same name

    (4) All of the above

93. Which of the following is a nonlinear data structure?

    (1) Stack

    (2) Queue

    (3) Tree

    (4) All the above

94. Which of the following is no a paradigm for designing algorithms?

    (1) Greedy Method

    (2) Divide and Conquer

    (3) Functional Programming

    (4) Dynamic Programming

95. Which of the following is a functional programming language?

    (1) Lisp

    (2) APL

    (3) Haskell

    (4) All the above

96. The number of tokens in the following C statement

    Printf("i=%d, &i=%x", i, &i);

    (1) 3

    (2) 10

    (3) 26

    (4) 21

97. Which of the following is false with respect to Operating Systems?

    (1) It is like a government

    (2) It is a control program

    (3) It does no resource allocation

    (4) It coordinates all the activities

98. SQL is used for

    (1) Data processing in batch mode

    (2) Query for relational databases

    (3) DTP work

    (4) None of the above

99. Which of the following is a line drawing algorithm?

   (1) DDA Algorithm

   (2) Bresenham's algorithm

   (3) Mid-point Algorithm

   (4) All the above

100. Which of the following statements is false?

   (1) LAN is an acronym for Local Area Network

   (2) VSAT is an acronym for Very Small Aperture Terminal

   (3) ISDN is an acronym for Integraged System Design Network

   (4) WAN is an acronym for Wide Area Network

101. Scalability of a distributed system refers to its

   (1) Ability to scale and tune its own performance

   (2) Ability for expansion on demand

   (3) Ability for expansion on demand

   (4) Ability for both expansion and contraction on demand

102. Which of the following software engineering concept does Ada language support?

   (1) Abstraction

   (2) Generic facility

   (3) Information Hiding

   (4) All of these

103. Match the following with respect to UML

   A : Use case Diagrams

   B : Encapsulation

   C : Aggregation

   D : Polymorphism

   I : Quality that allows one name to be used for two or more related but technically different purposes

   II : Mechanism that binds together code and the data it manipulates

   III : Actors, and Actions

   IV : Used to treat a collection of objects as a single object

   (1) A-II, B-III, C-I, D-IV

   (2) A-III, B-II, C-IV, D-I

   (3) A-III, B-I, C-IV, D-II

   (4) A-IV, B-I, C-II, D-III

104. The RSA algorithm is names after _____ who invented it

   (1) John Richradson, John Smith and Len Adleman

   (2) Ron Rivest, John Smith and L Hospital

   (3) Ron Rivest, Adi Shamir and Len Adleman

   (4) None of the above

105. The printing speed of a printer is measured by

    (1) PPM

    (2) bps

    (3) MB

    (4) dpi

106. A pipeline instruction is invoked when _____ instructions occurs

    (1) Register Transfer

    (2) Branch

    (3) Stack Operations

    (4) Arithmetic Operations

107. Friend functions have access to

    (1) Private and protected members

    (2) Public members only

    (3) Private members only

    (4) None

108. The maximum depth that a tree of N nodes can have is

    (1) N/2

    (2) N

    (3) Log N

    (4) 1

109. Which of the following is not a candidate problem to be solved by nonlinear programming (NLP)?

    (1) Optimization Problem

    (2) Traveling Salesperson Problem

    (3) Curve Fitting

    (4) Least Squares Analysis

110. Which of the following control structures of C is always executed at least once?

    (1) for loop

    (2) while loop

    (3) do-while loop

    (4) All the above

111. Which of the following derivations does a top-down parser use while parsing an input string? The input is assumed to be scanned in left to right order.

    (1) Leftmost Derivation

    (2) Leftmost Derivation traced out in reverse

    (3) Rightmost Derivation

    (4) Rightmost Derivation traced out in reverse

112. The disadvantage of a tree-structured directory structure is

    (1) It does not allow creating a sub-directory

    (2) It does not accept relative path specification

    (3) It does not allow sharing of file/directory

    (4) All the above

113. Which normal form is considered adequate for normal relational database design?

    (1) 2NF

    (2) 4NF

    (3) 3NF

    (4) 5NF

114. In Cohen-Sutherland line clipping algorithm, codes' bits are set according to the following order

    (1) RLBT (Right, Left, Bottom, Top)

    (2) LRBT

    (3) TBLR

    (4) TRLB

115. A central computer surrounded by one or more satellite computers is called

    (1) It provides a single virtual shared address space

    (2) It makes the task of distributed programming easy

    (3) It avoids the problems associated with the design of hardware interface

    (4) All the above

116. Which of the following is true with respect to distributed shared memory (DSM)?

    (1) It provides a single virtual shared address space

    (2) It makes the task of distributed programming easy.

    (3) It avoids the problems associated with the design of hardware interface

    (4) All the above

117. ─────── understands what customers want how to specify these into terms that a programmer or software engineer can understand

    (1) Software Architect

    (2) Project Manager

    (3) Software Analyst

    (4) Team Leader

118. Which is true with respect to Remote Procedure Call (RPC) mechanism?

    (1) Based on subroutine–call model

    (2) Unblocked version is also possible

    (3) Alternative to message-passing model

    (4) All the above

119. Which of the following is true respect to digital signature?

    (1) Digital signature algorithms and protocols do not inherently provide certainty about the date and time at which the underlying document was signed

    (2) Digital signatures are often used to implement electronic signatures, but not all electronic signature use digital signatures

    (3) Digital signature scheme is a type of asymmetric cryptography used to simulate the security properties of a signature in digital

    (4) All the above

120. The Stored Program concept is proposed by

    (1) Pascal

    (2) Niklaus Wirth

    (3) Von Neumann

    (4) None of the above

121. When will DMA most probably be used?
     (1) The performance of a system is to be increased
     (2) Several CPU's in a multiprocessing system share the same memory
     (3) The CPU must control a variety of the devices
     (4) All of the above

122. What is the value of the variable c after the *switch* statement in the C program given below?

    ```
    x = 3
    switch (x) {
            case 1: c = 'A'; break;
            case 2: c = 'B'; break;
            case 3: c = 'C'; break;
            default: c = 'F'; break;
    }
    ```
     (1) F
     (2) C
     (3) A
     (4) B

123. Which of the following sorting algorithms does not have a worst case running time of $O(n^2)$?
     (1) Bubble Sort
     (2) Quick Sort
     (3) Merge Sort
     (4) Heap Sort

124. Match the following asymptotic notations –used in the time and space analysis of algorithms-with their meanings
     A : O-notation
     B : Θ -notation
     C : Ω -notation
     I : Greater than or equal to ("≥")
     II : Less than or equal to ("≤")
     III : Equal to ("=")
     (1) A-III, B-II, C-I
     (2) A-II, B-III, C-I
     (3) A-I, B-II, C-III
     (4) None

125. BNF notation is introduced by
     (1) Booth and Niklaus Wirth
     (2) John Backus and Peter Naur
     (3) Booth and Peter Naur
     (4) John Backus and Niklaus Wirth

126. The output of a lexical analyzer is
     (1) Machine Code
     (2) Intermediate Code
     (3) A Stream of Tokens
     (4) A Parse Tree

127. Multiprogramming means
     (1) Executing more than one program at a time
     (2) Ability to accommodate multiple tasks in main memory
     (3) Presence of multiple processors in one system
     (4) All the above

128. With regard to the expressive power of the formal relational query languages, which of the following is true
     (1) Relational algebra is more powerful than relational calculus
     (2) Relational algebra has the same power as relational calculus
     (3) Relational algebra has the same power as safe relational calculus
     (4) None of these

129. Match the following
   A : Imaging
   B : Modeling
   C : Rendering
   D : Animation
   I : Representing 3D objects
   II : Constructing 2D images from 3D models
   III : Simulating changes over time
   IV : Representing 2D images

   (1) A-II, B-III, C-I, D-IV

   (2) A-III, B-II, C-IV, D-I

   (3) A-III, B-I, C-IV, D-II

   (4) A-IV, B-I, C-II, D-III

130. In the context of computer networks, which of the following is false?

   (1) In OSI model, network layer accepts messages from sessions layer and passes it to transport layer

   (2) Fiber optic devices for transmission have higher bandwidth than copper based devices

   (3) A set of layers and protocols is called network architecture

   (4) In the context of network architecture, a service is a set of primitive operations that a layer provides to the layer above it

131. With respect to distributed systems, transparency means

   (1) Visibility of operational details

   (2) Invisibility of operational details

   (3) Occasionally making the operational details visible

   (4) Ability to allow the light to pass through

132. The data flow model of an application mainly shows

   (1) The underlying data and the relationships among them

   (2) Processing requirements and the flow of data

   (3) Decision and control information

   (4) All the above

133. A state diagram of UML

   (1) Shows the permitted states that objects of a given class may take and the permitted transitions between pair of states

   (2) Useful for modeling classes corresponding to the objects in the diagram

   (3) Both (1) and (2)

   (4) None of the above

134. Expansion for DES, a most widely used encryption algorithm, is

   (1) Digital Encryption Standard

   (2) Digital Encryption Specification

   (3) Data Encryption Standard

   (4) Data Encryption Specification

135. Computing power of a microprocessor is measured by

   (1) FLOPS

   (2) MHz

   (3) MPS

   (4) All the above

136. A processor needs software interrupt to

(1) Test the interrupt system of the processor

(2) Implement co-routines

(3) Obtain system services which need execution of the privileged instructions

(4) Return from subroutines

137. The size of a string variable is

(1) 1 Byte

(2) 2 Bytes

(3) 4 Bytes

(4) None of the above

138. Quick sort is run on two inputs shown below to sort in ascending order:

I : 1, 2, 3,...,n   II : n, n-1,...,2, 1

Let k1 and k2 be the number of comparisons made for the inputs I and II respectively. Then

(1) k1 < k2

(2) k1 = k2

(3) k1 > k2

(4) None

139. Which of the following time complexities is said to be exponential?

(1) N^2

(2) 2^N

(3) N^3

(4) N log N

140. Match the following

A : Scope

B : Extent

C : Coercion

D : Cast

I : Interval of time during which references occur

II : Explicitly force a type conversion

III : Spatial region of the program within which references occur

IV : Change type (and possibly value)

(1) A-II, B-III, C-I, D-IV

(2) A-III, B-II, C-IV, D-I

(3) A-III, B-I, C-IV, D-II

(4) A-II, B-I, C-III, D-IV

141. If the two finite state machines are equivalent, then they should have the same number of

(1) States

(2) Edges

(3) States and Edges

(4) None of the above

142. Operating System is a

(1) Software

(2) Hardware

(3) Firmware

(4) Combination of all the above

143. Match the following
    A : Secondary Index
    B : Non–procedural Query language
    C : Closure of a Set of Attributes
    D : Natural–join
    I : Functional Dependency
    II : B–Tree
    III : Domain Calculus
    IV : Relational algebraic Opertions
    (1) A-II, B-III, C-I, D-IV
    (2) A-III, B-II, C-IV, D-I
    (3) A-III, B-I, C-II, D-IV
    (4) A-II, B-I, C-III, D-IV

144. Which of the following is true: A framebuffer of a graphics display system
    (1) Is an abstraction for the graphic hardware
    (2) Represents the framebuffer of some video hardware
    (3) Drives a video display from a memory buffer containing a complete frame of data
    (4) All the above

145. The main purpose of encryption is to provide
    (1) Data Security
    (2) Data Integrity
    (3) Data Redundancy
    (4) (1) and (2)

146. Which of the following is a disadvantage of distributed systems?
    (1) Economy of Resources
    (2) User Communication
    (3) Network, Software, and Security Problems
    (4) None of the above

147. Which of the following is a desirable property of a module?
    (1) Independency
    (2) Low cohesiveness
    (3) High Coupling
    (4) Multifunctional

148. An abstract class in UML
    (1) Does not instantiate objects
    (2) It is required for inheritance
    (3) Serves as a common placeholder in the inheritance hierarchy
    (4) All the above

149. Which of the following is false?
    (1) Public-key cryptography is also known as asymmetric cryptography
    (2) Asymmetric cryptography uses a pair of cryptographic keys
    (3) A message encrypted with the private key can be decrypted only with the corresponding public key
    (4) The private key is kept secret, while the public key is widely distributed

150. A computer's RAM is typically measured in
    (1) Unless, enabled, a CPU will not be able to process interrupts
    (2) Loop instructions can not be interrupted till they complete
    (3) A processor checks for interrupts before executing a new instruction
    (4) Only level-triggered interrupts are possible on microprocessor

ROUGH WORK