POST OF JUNIOR SCIENTIFIC OFFICER IN TAMIL NADU FORENSIC SCIENCES SUBORDINATE SERVICE -2023
COMPUTER BASED TEST
PAPER –I
COMPUTER SCIENCE
(P.G. DEGREE STANDARD)

1. Expand SIMD

   (A) Single Instruction Stream, Multiple Data Stream ✓
   (B) Simple Instruction Stream, Multi Digital Stream
   (C) Shift Instruction Stream, Multiple Dynamic Stream
   (D) Simple Instruction Stream, Manipulation of Data Stream
   (E) Answer not known

2. The —————— transfer the entire block of data one word at a time, directly to or from memory, without going through the processor.

   (A) Internal memory module
   (B) External memory module
   (C) DMA module ✓
   (D) Cache memory module
   (E) Answer not known

3. A —————— is a small, very high-speed memory maintained by the instruction fetch stage of the pipeline and containing the n most recently fetched instructions, in sequence.

   (A) Loop buffer ✓   (B) Intermediate buffer
   (C) Pipeline buffer   (D) Target buffer
   (E) Answer not known

4. Which of the following I/O contains, single address space for memory locations and I/O devices?

   (A) Isolated I/O   (B) I/O mapped I/O
   (C) Memory-mapped I/O ✓   (D) Programmed I/O
   (E) Answer not known

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5. Which of the following is SIMD array processor?

   (A) Cray – I   (B) VAX – II
   (C) UNIVAC – III   (D) ILLIAC – IV
   (E) Answer not known

6. The memory unit that communicates directly with CPU is called

   (A) Auxiliary memory   (B) Associative memory
   (C) Main memory   (D) Virtual memory
   (E) Answer not known

7. Which command is issued to activate the peripheral in order to inform it what to do?

   (A) Status Command   (B) Control Command
   (C) Data Output Command   (D) Data Input Command
   (E) Answer not known

8. Which one of the following is not a volatile memory?

   (A) SRAM   (B) DRAM
   (C) Flash   (D) RDRAM
   (E) Answer not known

9. A procedure employed in most RISC processors is the

   (A) Branch Prediction   (B) Loop Buffer
   (C) Delayed Branch   (D) Branch Target Buffer
   (E) Answer not known

10. Which is not a characteristics of a RISC processor?

(A) All operations done within the registers of the CPU

(B) Relatively few addressing modes

(C) Multi-cycle instruction execution

(D) Hardwired rather than micro programmed control

(E) Answer not known

11. What is the Access time of Cache memory?

(A) 3 to 10 ns   (B) 3 to 15 ns

(C) 3 to 18 ns   (D) 3 to 20 ns

(E) Answer not known

12. Which bus consists of lines for transferring data, address and read/write information?

(A) Memory Bus   (B) System Bus

(C) I/O Bus   (D) CPU Bus

(E) Answer not known

13. _____ distribute the responsibility for maintaining Cache coherence among all of the Cache controllers in a multiprocessor.

(A) Directory protocol   (B) MESI protocol

(C) Snoopy protocol   (D) Indirect protocol

(E) Answer not known

14. A ————— cycle is defined to be the time it takes to fetch two operands from registers, perform ALU operation and store result in a register.

    (A) Machine

    (B) Processor

    (C) Memory

    (D) I/O

    (E) Answer not known

15. An address of 24 lines can access up to ————— of memory.

    (A) 16 Kilo words

    (B) 16 Mega words

    (C) 16 Giga words

    (D) 16 Tera words

    (E) Answer not known

16. A Pipelined processor has 15 tasks. The time required to complete all tasks using 6 segment Pipeline is

    (A) 8 clock cycles

    (B) 9 clock cycles

    (C) 20 clock cycles

    (D) 21 clock cycles

    (E) Answer not known

17. In ————— addressing mode, the operand value is present in the instruction itself.

    (A) Implied Addressing

    (B) Immediate Addressing

    (C) Direct Addressing

    (D) Register Addressing

    (E) Answer not known

18. Name the type of instructions that can be executed only while the processor is in certain privileged state or executing a program in a special area of memory.

(A) Input/Output

(B) System Control

(C) Data Transfer

(D) Program Control

(E) Answer not known

19. ——————— is a circuit that detects instructions whose source operands are destinations of instructions farther up in the pipeline.

(A) Operand forwarding

(B) Delayed load

(C) Interlock

(D) Hazard

(E) Answer not known

20. The operation is specified by a binary code, known as ——————— in machine instruction.

(A) Address

(B) Opcode

(C) Operand

(D) Mnemonics

(E) Answer not known

21. ——————— is an ordering for a set of characters that determines whether a character is in higher, lower, or same order compared to another.

(A) Ascending order

(B) Descending order

(C) Lexicographic order

(D) Collating sequence

(E) Answer not known

22. What is the worst case efficiency of Quick Sort algorithm?

(A) $O(n)$

(B) $O(n^2)$

(C) $O(\log n)$

(D) $O(n \log n)$

(E) Answer not known

23. Which one of the following is usually associated with small stand-alone computers with simple batch operating system?

(A) Single contiguous allocation

(B) Partitioned allocation

(C) Static allocation

(D) Dynamic allocation

(E) Answer not known

24. What is the worst case complexity of Bubble Sort?

(A) $O(n)$

(B) $O(n^2)$

(C) $O(\log n)$

(D) $O(n \log n)$

(E) Answer not known

25. In tree data structure nodes with the same parent are called

(A) Leaves

(B) Child

(C) Grant child

(D) Siblings

(E) Answer not known

26. Balance Factor (BF) for a node is calculated by using, which of the following formula?

   (A) BF = Height of Left subtree – Height of Right subtree

   (B) BF = Degree of Left subtree – Degree of Right subtree

   (C) BF = Path of left subtree – Path of Right subtree

   (D) BF = Leaf node of left subtree – leaf node of Right subtree

   (E) Answer not known

27. The right pointer of a Threaded binary tree points at ?

   (A) NULL

   (B) Root

   (C) Inorder Successor

   (D) Postorder Successor

   (E) Answer not known

28. The Pre order traversal of a binary search tree is

   12, 8, 6, 2, 7, 9, 10, 16, 15, 19, 17, 20

   Then the post order traversal of this tree is

   (A) 2, 6, 7, 8, 9, 10, 12, 15, 16, 17, 19, 20

   (B) 2, 7, 6, 10, 9, 8, 15, 17, 20, 19, 16, 12

   (C) 7, 2, 6, 8, 9, 10, 20, 17, 19, 15, 16, 12

   (D) 7, 6, 2, 10, 9, 8, 15, 16, 17, 20, 19, 12

   (E) Answer not known

29. Which of the following is not true about Linked list?

    (A) It is a collection of linked nodes

    (B) It helps in Dynamic allocation of memory space

    (C) It allows direct access to any of the nodes

    (D) It requires more memory space in comparison to an array

    (E) Answer not known

30. If 'front' points at the front end of the queue, 'rear' points at the rear end of the queue and 'queue[ ]' is the array containing queue elements, then which of the following statements correctly reflects the delete operation of a queue?

    (A) item = queue [rear]; rear = rear+1;

    (B) item = queue [front]; front = front+1;

    (C) item = queue[– – front];

    (D) item = queue [– – rear];

    (E) Answer not known

31. Write the time Complexity of search operation in linked list

    (A) $O(1)$

    (B) $O(n)$

    (C) $O(\log n)$

    (D) $O(n \log n)$

    (E) Answer not known

32. If top points at the top of the stock and 'stack[ ]' is the array containing stack elements, then which of the following statements correctly reflect the POP operation?

    (A)   top = top – 1; item = stack [top];

    (B)   item = stack [top]; top = top-1;

    (C)   item = stack [– – top];

    (D)   Both (B) and (C) are correct

    (E)   Answer not known

33. In the activation record management of stack, the implementation of ——————— is meant to solve the problem of allocation of memory. variables that are declared in different blocks.

    (A)   Life time of a variable

    (B)   Scope of a variable

    (C)   Sparse rule

    (D)   Scope rule

    (E)   Answer not known

34. Which sorting technique closely follows the divide – and – conquer paradigm?

    (A)   Simple Merge

    (B)   Binary Merge

    (C)   Internal Merge

    (D)   External Merge

    (E)   Answer not known

35. A ————————— matrix is a two dimensional array where the majority of the elements have the value null.

   (A) Triangular
   (B) Diagonal
   (C) Tridiagonal
   (D) Sparse
   (E) Answer not known

36. What will happen if the following snippet is executed?

```
void r_fn()

   {

   r_fn();

   }

int main()

   {              return 0;

     r_fn();     R;}
```

   (A) The code will be executed successfully and no output will be generated
   (B) The code will be executed successfully and random output will be generated
   (C) Show a Complier error
   (D) The code will run for same time and stop when stack over flow
   (E) Answer not known

37. ——————— representation of set allows the Multiplicity of elements.

   (A) Linked List

   (B) Hash Table

   (C) Bit Vector

   (D) Tree

   (E) Answer not known

38. Which one is named as an Escape Sequence?

   (A) % =

   (B) \ ?

   (C) ! =

   (D) | |

   (E) Answer not known

39. The ——————— operation with this representation can be performed by pairing the corresponding buckets.

   (A) Union

   (B) Difference

   (C) Intersection

   (D) Equality

   (E) Answer not known

40. If the process call itself during the operation is called

   (A) Redo operation

   (B) Recursion

   (C) Repetition

   (D) Iteration

   (E) Answer not known

41. Which one of the following is not a recovery in DB2?

    (A) Crash / Restart

    (B) Version / Image

    (C) Rollback

    (D) Rollforward

    (E) Answer not known

42. The —————— consistency is to avoid cascading aborts without necessarily ensuring serializability.

    (A) Multiversion

    (B) Degree-two

    (C) Multiple Granularity

    (D) Serial

    (E) Answer not known

43. The techniques wait – die and wound die are —————— techniques.

    (A) Dead Lock Prevention

    (B) Dead Lock Detention

    (C) Dead Lock Omit

    (D) Dead Lock Remove

    (E) Answer not known

44. Which one of the following is the property of time stamp?

    (A) Monotonicity

    (B) Atomicity

    (C) Irreducibility

    (D) Concurrency

    (E) Answer not known

45. An Entity in A is associated with at most one entity in B and an entity in B is associated with at most one entity in A. This mapping is known as

(A) One to-one

(B) One-to-many

(C) Many-to-one

(D) Many-to-many

(E) Answer not known

46. RAID level 5 known for

(A) disk mirroring with block striping

(B) bit-interleaved parity organization

(C) block-interleaved parity organization

(D) block-interleaved distributed parity organization

(E) Answer not known

47. —————— is a set of one or more attributes that taken collectively allow us to identify uniquely an entity in the entity set.

(A) Super key

(B) Candidate key

(C) Primary key

(D) Foreign key

(E) Answer not known

48. ————— are logical tables of data extracted from existing tables.

(A) Relations

(B) Queries

(C) Data bases

(D) Views

(E) Answer not known

49. Which one of the following component executes low-level instructions generated by the DML compiler?

   (A) Instruction evaluation engine

   (B) Query evaluation engine ✓

   (C) Transaction Manager

   (D) DML compiler

   (E) Answer not known

50. Which function returns the smallest integer greater than or equal to data?

   (A) CEIL ✓

   (B) FLOOR

   (C) MOD

   (D) POWER

   (E) Answer not known

51. Name the function that can be used to expand any abbreviations used in the table.

   (A) SELECT

   (B) DECODE ✓

   (C) NVL

   (D) TO_CHAR

   (E) Answer not known

52. In processing a query on B+ Trees, if there are K search key values in the file, the path is no longer than

(A) $\log_{[n/2]}^{(K)}$

(B) $\log_{[n]}^{(K)}$

(C) $n \log(K)$

(D) $\log_{[n \times n]}^{(K)}$

(E) Answer not known

53. Disks and Tapes are the examples of

(A) Volatile storage

(B) Non-volatile storage

(C) Stable storage

(D) Unstable storage

(E) Answer not known

54. Which one of the following is a set of one or more attributes taken collectively to uniquely identify a record?

(A) Candidate key

(B) Sub key

(C) Super key

(D) Foreign key

(E) Answer not known

55. A value that appears in one relation for a given set of attributes also appears for a certain set of attributes in another relation.

 (A) Authorization

 (B) Assertions

 (C) Referential Integrity

 (D) Domain constraints

 (E) Answer not known

56. In which one of the following data models, a segment can have multiple parent segments?

 (A) Network model

 (B) Relational model

 (C) Hierarchical model

 (D) Hybrid model

 (E) Answer not known

57. The file organization which supports any record can be placed anywhere in the file where there is a space for the record is called as

 (A) Sequential file organization

 (B) Hashing file organization

 (C) Heap file organization

 (D) Multitable clustering organization

 (E) Answer not known

58. Which model represent the relationship between records is expressed in the form of pointers?

(A) Object model

(B) Network model

(C) ER – model

(D) Relational model

(E) Answer not known

59. Which normal form enforce "No non-prime attribute is transitively dependent on the key attribute"?

(A) BCNF

(B) 4th Normal form

(C) 3rd Normal form

(D) 5th Normal form

(E) Answer not known

60. Domain constraints and referential integrity constraints are special forms of

(A) Authorization

(B) Assertion

(C) Data redundancy

(D) Inconsistency

(E) Answer not known

61. Which one of the following is the correct sequence of activities recommended by a typical proactive risk management framework?

   (A) Risk control, risk identification and risk assessment

   (B) Risk assessment, risk identification and risk control

   (C) Risk identification, risk assessment and risk control

   (D) Risk assessment, risk control and risk identification

   (E) Answer not known

62. ————— risks threaten the quality and timeliness of the software to be produced

   (A) Project risks

   (B) Technical risks

   (C) Business risks

   (D) Strategic risks

   (E) Answer not known

63. Which one is not part of risk evaluation?

   (A) Risk identification and ranking

   (B) Risk and NPV

   (C) Cost – benefit analysis

   (D) Cash flow forecasting

   (E) Answer not known

64. Which of the following is not a direct measures of software?

   (A) LOC

   (B) Speed

   (C) Errors

   (D) Quality

   (E) Answer not known

65. Which one of the following is not in the planning for risk?

(A) Risk planning

(B) Risk cost cutting

(C) Risk identification

(D) Risk analysis and prioritization

(E) Answer not known

66. What are the two approaches in identification of risks?

(A) Checklists and monitoring

(B) Checklists and brainstorming

(C) Checklists and analysis

(D) Checklists and framework

(E) Answer not known

67. ———— showing the planned cumulative expenditure incurred by the use of resources overtime.

(A) Cost schedule

(B) Resource schedule

(C) Activity schedule

(D) Project schedule

(E) Answer not known

68. The ———— provides an indication of the relationship between effort applied and delivery time for a software project

(A) Program Evaluation and Review Technique (PERT)

(B) Critical Path Method (CPM)

(C) Budgeted Cost of Work Scheduled (BCWS)

(D) Putnam–Norden–Rayleigh (PNR) curve

(E) Answer not known

69. Which one of the following constraints on a project is known as "triple constraints"?

(A) Quality, duration and effort

(B) Cost, duration and scope

(C) Cost, resources and duration

(D) Cost, quality and product size

(E) Answer not known

70. In COCOMO model, which of the following is estimated?

(A) LOC

(B) Funefiry points

(C) Effort

(D) KLOC

(E) Answer not known

71. What is organic mode is COCOMO?

(A) Big teams, Highly familiar

(B) Small teams, Highly familiar

(C) Middle teams, Highly familiar

(D) Ultra Big teams, Highly familiar

(E) Answer not known

72. One of the stage which is not in COCOMO II is

(A) Early design

(B) Post architecture

(C) Application composition

(D) Cost design

(E) Answer not known

73. Match the following

	List I		List II
(a)	Organizing	(1)	giving instruction
(b)	Directing	(2)	coming up with new solutions
(c)	Controlling	(3)	making arrangements
(d)	Innovating	(4)	taking action to remedy hold-ups

	(a)	(b)	(c)	(d)
(A)	3	4	1	2
(B)	3	1	4	2
(C)	2	3	4	1
(D)	4	3	1	2

(E) Answer not known

74. To cope with activity overruns, a ————— is inserted at the end of the project before the target completion date.

(A) Critical chain

(B) Feeding buffer

(C) Project buffer

(D) Feeding chain

(E) Answer not known

75. The project planning step which involved in the study of project performance and the demand of changes, is

(A) Project Rollout planning

(B) Planning change management

(C) Performance reporting

(D) Project plan development and execution

(E) Answer not known

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76. One of the approach is not a identifying activities.

    (A) The activity–based approach

    (B) The cost–based approach

    (C) The product–based approach

    (D) Hybrid approach

    (E) Answer not known

77. The return on investment (ROI) is easy to calculate

    (A) Payback period

    (B) Return on capital

    (C) Net present value

    (D) Internal rate of return

    (E) Answer not known

78. Which one of the following is not an objective of Activity Planning?

    (A) Feasibility assessment

    (B) Resource allocation

    (C) Detailed costing

    (D) Ensure economic growth and development

    (E) Answer not known

79. When the IRR is equal to the discount rate, what can be said about the NPV?

  (A) It would be positive

  (B) It would be negative

  (C) It would be equal to zero

  (D) It cannot be determined without knowing the exact discount rate

  (E) Answer not known

80. Which among these is not the objectives of activity planning?

  (A) Feasibility assessment

  (B) Resource allocation

  (C) Detailed costing

  (D) Decision making

  (E) Answer not known

81. Which element is used to surround information, such as the signature of the person who created the page?

  (A) <AUTHOR?

  (B) <ADDRESS>

  (C) <SIGNATURE>

  (D) <TITLE >

  (E) Answer not known

82. Which of the following is not a physical text-formatting element?

  (A) <I>

  (B) <BIG>

  (C) <SUB>

  (D) <STRONG>

  (E) Answer not known

83. What is the use of <++> tag in HTML pages?

   (A) Image Display
   (B) Style tag for table heading
   (C) Creating table
   (D) Monospace – teletype; fixed width font
   (E) Answer not known

84. ——————————header application used to compose the message.

   (A) X–mailer
   (B) X–Sender
   (C) X–UDL
   (D) Mime–Version
   (E) Answer not known

85. ——————————is a method of attaching files in E–mail programs which is commonly used in Macintosh computers.

   (A) Binhex
   (B) Unencoding
   (C) BinOct
   (D) MIME
   (E) Answer not known

86. A program designed to identify certain groups of numbers or letters, such as credit card numbers and passwords.

   (A) Packet sniffer
   (B) Encryption
   (C) Cryptography
   (D) Digital signature
   (E) Answer not known

87. Secured e-mail that uses digital signature is called ——————.

    (A) SMTP

    (B) MMTP

    (C) S/MIME

    (D) SIME

    (E) Answer not known

88. Which system is used by SSL protocol to secure the web transactions?

    (A) Public key cryptography

    (B) Key cryptography

    (C) Public key protect

    (D) encrypt

    (E) Answer not known

89. Which of the following used to embed executable programs into a web page?

    (A) VB Script

    (B) Java Script

    (C) J Script

    (D) ActiveX controls

    (E) Answer not known

90. What is NNTP?

    (A) News Network Transfer Protocol

    (B) Network News Transfer Protocol

    (C) Nortan Network Transfer Protocol

    (D) Natural Network Transfer Protocol

    (E) Answer not known

91. ADSL stands for

    (A) Asymmetric Data Subscriber Line
    (B) Asymmetrix Data Service Line
    (C) Asymmetric Digital Service Locator
    (D) Asymmetric Digital Subscriber Line
    (E) Answer not known

92. Which one of the following is a correct formula for determining the size (in bytes) of a digital stereo recording?

    (A) Sampling rate * duration of recording in seconds * (bit resolution/8) * 1

    (B) Sampling rate × duration of recording in seconds * (bit resolution/8) * 2

    (C) Sampling rate × duration recording in milli seconds × (bit resolution/8) × 1

    (D) Sampling rate × duration recording in milli seconds ×(bit resolution/8) × 2

    (E) Answer not known

93. A ——————— is the simplest transmission medium where each wire is insulated from the other and both are open to tree space.

    (A) Two-wire open lines
    (B) Twisted pair lines
    (C) Coaxial cable
    (D) Optical fiber
    (E) Answer not known

94. Which one is a proprietary microsoft format developed to improve MP3?

    (A)   M4B (MPEG–4 Audio Book)

    (B)   MIDI (Musical Instrument Digital Interface)

    (C)   WMA (Windows Media Audio)

    (D)   M4A (MPEG–4 Audio)

    (E)   Answer not known

95. ———————————microphone is equally sensitive to sounds coming from all directions.

    (A)   Bi–directional

    (B)   Omni–directional

    (C)   Uni–directional

    (D)   Both–directional

    (E)   Answer not known

96. ——————————— is a software application used to create digital fonts, available for both microsoft windows and Apple Macintosh platforms.

    (A)   Word processor

    (B)   Text editor

    (C)   Fontographer

    (D)   Mapping Text

    (E)   Answer not known

97. Selected applications such as, telephony over a PSTN or an ISDN generate a constant bit rate stream that is transmitted transparently over the total network is called

    (A) Physical layer
    (B) Network layer
    (C) Transport layer
    (D) Link layer
    (E) Answer not known

98. In communication modes, the information flows in both directions but alternatively is called

    (A) simplex
    (B) duplex
    (C) half–duplex
    (D) broadcast
    (E) Answer not known

99. MMI stands for

    (A) Machine – Man interface
    (B) Man – Machine Interface
    (C) Many – Man Interface
    (D) Many – Machine Interface
    (E) Answer not known

100. Which of the following is possible because of biological phenomenon known as persistence of vision and a psychological phenomenon called phi?

(A) Image

(B) Sound

(C) Animation

(D) Video

(E) Answer not known

101. The multistage graph is used to find ——— using dynamic programming concept.

(A) a resource allocation to a problem

(B) a minimum-cost path from source to destination

(C) a flow for getting solution

(D) a network communication

(E) Answer not known

102. Which algorithm is called the pairwise summation, it may substantially reduce the accumulated round-off error of the sum of numbers that can be represented only approximately in a digital computer?

(A) Greedy

(B) Dynamic

(C) Divide and Conquer

(D) Branch and Bound

(E) Answer not known

103. The space complexity of an algorithm is

    (A) the amount of memory it needs to run to completion

    (B) the amount of secondary storage space it needs to run to completion

    (C) the number of instruction it needs to run to completion

    (D) the number of variables it needs to run to completion

    (E) Answer not known

104. The time complexity of an algorithm is

    (A) the amount of memory it needs to run to complete

    (B) the amount of computer time it needs to run to completion

    (C) the amount of time required to process symbol table

    (D) the number of program lines

    (E) Answer not known

105. ——————— means that the algorithm does not use extra space for manipulating the input but may require a small extra space for its operation.

    (A) Stable

    (B) Unstable

    (C) In-place

    (D) Out-place

    (E) Answer not known

106. The average time of Quick Sort on n elements is

(A) $O(n)$

(B) $O(n+1)$

(C) $O(n^2)$

(D) $O(n \log n)$

(E) Answer not known

107. Tree Vertex Splitting Problem (TVSP) is to determine

(A) the number of vertices in a tree

(B) the number of edges in a tree

(C) an optimal placement of boosters

(D) the number of vertices and edges

(E) Answer not known

108. The sequence of applications of the rules that produces the finished string of terminals from the starting symbol is called

(A) Terminals

(B) Non-terminals

(C) Alphabets

(D) Derivation

(E) Answer not known

109. Which of the following is a formal model of a computer?

(A) Moore machine

(B) Non deterministic finite automata

(C) Mealy machine

(D) Turing machine

(E) Answer not known

110. A context free grammar is said to be in chomsky normal form if every production is of one of these two types

   (A)   AB → C (C is a variable) A → ∈

   (B)   < → β where |α| >= |β|

   (C)   (i) A → BC (B & C are variables)

         (ii) A → σ (σ is a terminal symbol)

   (D)   AB → CD and A → B (A, B, C, D are variables)

   (E)   Answer not known

111. If all the productions in a given context free grammar fit one of the two forms :

   Non terminal → Semiword

                  (Or)

   Non terminal → word

   where word may be Null then the language generated by this context free grammar known as

   (A)   regular

   (B)   irregular

   (C)   invalid

   (D)   common

   (E)   Answer not known

112. Turing-recognizable language that are not Turing-decidable, correspond to problems that are —————— by Turing Machines.

   (A)   Solvable

   (B)   Unsolvable

   (C)   Non-enumerable

   (D)   Enumerable

   (E)   Answer not known

113. The grammar G = {{s}, {a, b}, s, p} with production S → aSa, S → bSb
S – λ, is a

   (A) Context free language
   (B) Recursive language
   (C) Regular language
   (D) Recursively Enumerable language
   (E) Answer not known

114. Find the CFG equivalent of S → AB A → aAA| ε B → bBB|ε
without ε production.

   (A) S → AB A →aAA B→ bBB
   (B) S → AB A → aAA B→ bBB A → ε B → ε
   (C) S → A|B A →a A|a B→bB|b
   (D) S → AB | A|B A →aAA |aA|a B → bBB|bB|b
   (E) Answer not known

115. Rules that do not involve the meaning of words in context free languages
are called

   (A) Syntax
   (B) Semantics
   (C) Specific
   (D) Generative
   (E) Answer not known

116. ——————————— is the string with zero occurrences of symbols.

    (A)   Length of a string

    (B)   Power of a string

    (C)   Empty string

    (D)   Concatenation of string

    (E)   Answer not known

117.
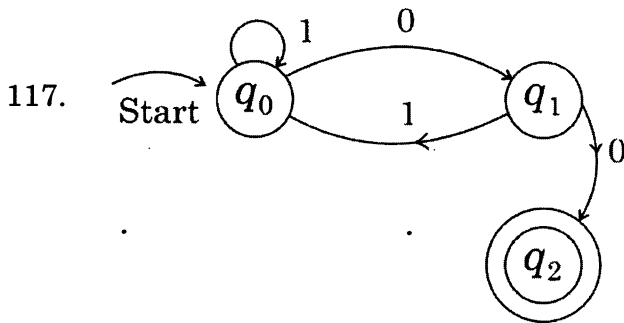
The above finite automata accepts

    (A)   all strings in {0, 1} having even number of 0's

    (B)   {10, 101, 1100}

    (C)   All strings in {0, 1} having even number of 1's and odd number of 0's

    (D)   {001, 10010, 110}

    (E)   Answer not known

118. If there are k symbols in the alphabet, calculate the number of strings of lengths 'n' available in the formal language.

    (A) $K + n$

    (B) $K * n$

    (C) K^n

    (D) n^K

    (E)   Answer not known

119. $\{a^{2n} \mid n >= 0\}$ is represented by a regular expression

(A) $(aa)^*$

(B) a^*

(C) aa^*a

(D) $ab^* a^*$

(E) Answer not known

120. The merge sort algorithm follows —————— paradigm.

(A) Back tracking

(B) Branch and Bound

(C) Greedy method

(D) Divide and Conquer

(E) Answer not known

121. A ——————— is a collection of loosely coupled processors inter connected by a communication network.

(A) Multi-processor systems

(B) Distributed systems

(C) Clustered systems

(D) Real-Time systems

(E) Answer not known

122. Every Ethernet device has a unique byte number called as

(A) MAC address

(B) ARP address

(C) Broadcast address

(D) RPC address

(E) Answer not known

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123. _____ occurs when circumstances within the system force a higher-priority task to wait for a lower priority task.

(A) Priority inversion

(B) Priority ceiling

(C) Priority interleaving

(D) Priority updation

(E) Answer not known

124. Acyclic Resource Allocation Graph (RAG) implies ————

(A) No deadlock

(B) Deadlock

(C) Starvation

(D) Preemption

(E) Answer not known

125. A system with 5 process (P_0....P_4) and 3 resources (A, B, C) Resource type A has to instances, B has 5 instances and C has 7 instances. A time to the following snapshot has been taken

Process	Allocation	Man	Available
	ABC	ABC	ABC
P_0			
P_1	0 1 0	7 5 3	3 3 2
P_2	2 0 0	3 2 2	
P_3	3 0 2	9 0 2	
P_4	2 1 1	2 2 2	
	0 0 2	4 3 3	

The sequence <P_1, P_3, P_4,P_2,P_0 > leads the system to

(A) a safe state

(B) an unsafe state

(C) a protected safe

(D) a deadlock

(E) Answer not known

126. _____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.

(A) Paging

(B) Demand Paging

(C) Segmentation

(D) Swapping

(E) Answer not known

127. The request and release of resources are

    (A) Command line arguments

    (B) Interrupts

    (C) Special programs

    (D) System calls

    (E) Answer not known

128. Memory is divided into partitions prior to the processing of any jobs is known as

    (A) Single partition specification

    (B) Multiple partition specification

    (C) Static partition specification

    (D) Dynamic partition specification

    (E) Answer not known

129. A _____ can occur as a result of a programming error when process attempts to store data beyond the limits of a fixed-sized buffer and consequently overwrites the adjacent memory location.

    (A) Stack overflow

    (B) Swap overflow

    (C) Page overflow

    (D) Buffer overflow

    (E) Answer not known

130. Match the following with corresponding year of development.

(a) Linux 1.0   1. 1962
(b) MINIX   2. 1961
(c) CTSS   3. 1994
(d) PDP – 1   4. 1987

	(a)	(b)	(c)	(d)
(A)	1	3	2	4
(B)	3	1	4	2
(C)	3	4	1	2
(D)	2	1	3	4
(E)	· Answer not known			

131. Match the following RTOS with corresponding development Agency.

(a) Harmony   1. University of Maryland
(b) MARUTI   2. University of Michigan
(c) VRTX   3. National Research Council of Canada
(d) HART   4. Hunder and Ready Inc

	(a)	(b)	(c)	(d)
(A)	3	1	4	2
(B)	3	2	1	4
(C)	1	3	2	4
(D)	2	4	3	1
(E)	Answer not known			

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132. The representation of three-address statements containing four fields is known as _____.

(A) Three address code

(B) Quadruples

(C) Triples

(D) Indirect Triples

(E) Answer not known

133. A table which includes all the identifiers used in the program is called

(A) Terminal Table

(B) Uniform Symbol Table

(C) Identifier Table

(D) Literal Table

(E) Answer not known

134. A _____ Table in compiler's is merely a table with two fields, a name field and an information field.

(A) Hash

(B) Storage

(C) Symbol

(D) Page

(E) Answer not known

135. What is the output of lexical analyzer?

(A) A parse tree

(B) A list of tokens

(C) Intermediate code

(D) Machine code

(E) Answer not known

136. A _____ parser is madeup of a procedure for each nonterminal symbol in the grammar

(A) Recursive – descent

(B) Shift – Reduce

(C) Top – down

(D) Operator – Precedence

(E) Answer not known

137. The translator which perform macro expansion is called a

(A) Processor

(B) Macro preprocessor

(C) Micro preprocessor

(D) Assembler

(E) Answer not known

138. A linkage editor produces a linked version of the program called

(A) Executable image

(B) Object program

(C) Executable program

(D) Load image

(E) Answer not known

139. The occurrence in the source program of the macro name, as an operation mnemonic to be expanded is called a

(A) Micro

(B) Micro call

(C) Macro call

(D) Macro list

(E) Answer not known

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140. An external symbol table _____ contains all external symbols defined in the set of control sections together with the address assigned to each.

   (A) BSTAB

   (B) CSTAB

   (C) DSTAB

   (D) ESTAB

   (E) Answer not known

141. What does Tunneling mean?

   (A) Virtual pipe for sending data packets between a tunnel entry and a tunnel end point

   (B) Virtual pipe for sending data between tunnels

   (C) Virtual pipe for retransmission of packets

   (D) Virtual pipe for sending acknowledgement between tunnels

   (E) Answer not known

142. WML script can be used to expose and extend device functionality without changes to the

   (A) Device components

   (B) Device firmware

   (C) Device hardware

   (D) Device software

   (E) Answer not known

143. In WAP Architecture, the protocol WTLS offers its service at the

    (A) T – SAP

    (B) SEC – SAP

    (C) TR – SAP

    (D) S – SAP

    (E) Answer not known

144. What is the size of the sequence number field of Record Protocol Header of WTLS Record Protocol?

    (A) 8 bits

    (B) 16 bits

    (C) 32 bits

    (D) 64 bits

    (E) Answer not known

145. The WAP programming model is based on three elements, such as

    (A) The router, the bridge and the interface

    (B) The client, the router and interface

    (C) The client, the gateway and the original server

    (D) The router, the interface, the original server

    (E) Answer not known

146. _____ protocols attempt to evaluate continuously the routes within the network.

    (A) Proactive

    (B) Reactive

    (C) Geographic

    (D) Hierarchical

    (E) Answer not known

147. There is only some redundancy in wired networks which are controlled by

    (A)   A routing table

    (B)   A controller protocol

    (C)   A network administrator

    (D)   An addition component

    (E)   Answer not known

148. Choose the service primitives of wireless Transaction protocol.

    (A)   TR – Invoke, TR – Result and TR – Abort

    (B)   TR – Invoke, TR – Access and TR – Abort

    (C)   TR – Initiate, TR – Process and TR – Terminate

    (D)   TR – Initiate, TR – Result and TR – Terminate

    (E)   Answer not known

149. GRE stands for

    (A)   General Routing Encapsulation

    (B)   Generic Routing Encapsulation

    (C)   Global Routing Encapsulation

    (D)   Guideline Routing Encapsulation

    (E)   Answer not known

150. In Mobile communications, DSSS stands for

    (A)   Direct Spread Sequence Spectrum

    (B)   Direct Spread Spectrum Sequence

    (C)   Direct Sequence Spectrum Spread

    (D)   Direct Sequence Spread Spectrum

    (E)   Answer not known

151. What is the use of checksum

   (A) Calculating the network speed

   (B) Counting the packets

   (C) It is an error detection method

   (D) It is security process

   (E) Answer not known

152. Typically, ———— is an ad-hoc scenario comprise routing and system functionality.

   (A) Home Agent

   (B) Foreign Agent

   (C) Mobile modes

   (D) Mobile IP

   (E) Answer not known

153. WSP provides applications with an interface for two session services. The connection oriented session service operates above the reliable transport protocol WTP and the connectionless session service operates above the unreliable transport protocol

   (A) WTA

   (B) WDP

   (C) WAP

   (D) WSP

   (E) Answer not known

154. Bluetooth offers routing capabilities in ———— based on MAC addresses for ad-hoc networks

(A) Layer 1

(B) Layer 2

(C) Layer 3

(D) Layer 4

(E) Answer not known

155. The internet routes the packet to the routes responsible for the home network of mobile node using

(A) Routing mechanisms

(B) Home Agent

(C) Foreign Agent

(D) Co-located COA

(E) Answer not known

156. The flooding approach to forward a packet across an unknown topology, works if the load is ———— and it is very ————

(A) Low, inefficient

(B) Low, efficient

(C) High, inefficient

(D) High, efficient

(E) Answer not known

157. User Datagram protocol packets are used for

(A) Address requests

(B) Data requests

(C) Registration requests

(D) User ID requests

(E) Answer not known

158. ———— is an index that identifies a security context between pair of nodes. This security context is configured so that the two nodes shares a secrete key and parameters relevent to this association.

(A) Security parameter index

(B) Security authenticator index

(C) Security Service index

(D) Security attack index

(E) Answer not known

159. What are the two methods for Agent discovery in mobile network?

(A) Agent advisor and agent solicitation

(B) Agent admin and agent solicitation

(C) Agent advertisement and agent solicitation

(D) Agent address and agent solicitation

(E) Answer not known

160. The main purpose of registration is to inform ———— for correct forwarding of packets.

(A) Home agent of previous location

(B) Home agent of current location

(C) Care-of address of packets

(D) Foreign agent of next location

(E) Answer not known

161. Which of the following notations can be used to show the structuring and containment of many different model elements, such as classes?

(A) Package Notation

(B) Component Notation

(C) Artifact Notation

(D) Node Notation

(E) Answer not known

162. ———— is constructed from its parts and an assembly part situation physically exists.

(A) Assembly

(B) Container

(C) Pattern

(D) Frame work

(E) Answer not known

163. In an object oriented environment every piece of data, or object is surrounded by a rich set of routines called

    (A)   Process

    (B)   Methods

    (C)   Schemes

    (D)   Activities

    (E)   Answer not known

164. Which is called as "is-a-kind-of" relationship?

    (A)   Association

    (B)   Dependency

    (C)   Relationship

    (D)   Generalization

    (E)   Answer not known

165. Match the following

	List I		List II
(a)	Procedure oriented	(1)	Invariant relationships
(b)	Object oriented	(2)	Algorithms
(c)	Logic oriented	(3)	Classed and objects
(d)	Constraint oriented	(4)	Goals, often expressed in predicate calculus

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	2	4	1	3
(C)	4	3	2	1
(D)	2	1	4	3
(E)	Answer not known			

166. ———— event represents a named object that is thrown asynchronously by one object and then received by another

    (A) Signal
    (B) Call
    (C) Time
    (D) Change
    (E) Answer not known

167. ———— represent the state of an object

    (A) Entity
    (B) Attribute
    (C) Class
    (D) Event
    (E) Answer not known

168. Which of the following is a form of aggregation with strong ownership to represent the component of a complex object?

    (A) N-Ary-of
    (B) A-part-of
    (C) Consists of
    (D) Is-group-of
    (E) Answer not known

169. Which of the following view of a system encompasses the classes, interfaces, and collaborations that form the vocabulary of the problem and its solution?

(A) Usecase view

(B) Design view

(C) Process view

(D) Implementation view

(E) Answer not known

170. 'A-part-of' composition is a form of aggregation with strong ownership to represent the component of a complex object. It is referred to as ———— relationship

(A) part-group-of

(B) is-group-of

(C) group-part

(D) part-whole

(E) Answer not known

171. ———— means that the same operation may behave differently on different classes.

(A) Inheritance

(B) Polymorphism

(C) Encapsulation

(D) Information Hiding

(E) Answer not known

172. Match the following

List I

(a) Structural things

(b) Behavioral things

(c) Grouping things

(d) Annotational things

List II

(1) Organizational parts of UML model

(2) Noun of the UML model

(3) Explanatory parts of UML model

(4) Dynamic parts of UML model

	(a)	(b)	(c)	(d)
(A)	2	4	1	3
(B)	3	4	2	1
(C)	2	1	4	3
(D)	3	1	4	2

(E) Answer not known

173. Which diagram shows a set of nodes and their relationships?

(A) Deployment diagram

(B) Class diagram

(C) Component diagram

(D) Object diagram

(E) Answer not known

174. Which of the following cannot be included in a modeling language?

(A) Model elements

(B) Object domain

(C) Notation

(D) Guidelines

(E) Answer not known

175. Which of the following diagram is used to view the dynamic parts of system?

    (A)   Class diagram

    (B)   Sequence diagram

    (C)   Component diagram

    (D)   Deployment diagram

    (E)   Answer not known

176. Which sorting method is faster than merge sort?

    (A)   Bubble sort

    (B)   Quick sort

    (C)   Ordinary sort

    (D)   Radix sort

    (E)   Answer not known

177. Match the following :

(a) Properties   1. Nonspecific function call

(b) Behaviour   2. Protection Mechanism

(c) Messages   3. State of an object

(d) Encapsulation   4. Collection of methods

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	4	3	1	2
(C)	3	4	2	1
(D)	3	4	1	2

(E) Answer not known

178. ——————— shows the objects and relationships involved in an interaction and the sequence of messages exchanged among the objects during interaction.

(A) Interaction diagram   (B) Activity diagram

(C) Collaboration diagram   (D) Static diagram

(E) Answer not known

179. The term ——————— represents the role a user plays with respect to the system.

(A) Actor   (B) Object

(C) Class   (D) Entity

(E) Answer not known

180. _____ describes the behaviour of a system by viewing the interaction between the system and its environment

    (A) Sequence diagram   (B) Collaboration diagram

    (C) State chart diagram   (D) Activity diagram

    (E) Answer not known

181. Which standard includes the Elliptic curve Digital signature Algorithm?

    (A) FIPS 186   (B) FIPS 199

    (C) FIPS 200   (D) FIPS 188

    (E) Answer not known

182. What kind of computer security attack is an attempt by an unauthorized user to gain access to a system by posing as an authorized user?

    (A) Falsification   (B) Obstruction

    (C) Masquerade   (D) Repudiation

    (E) Answer not known

183. Which scheme minimizes the message dependent, amount of computation required to generate a signature?

    (A) Elgamal digital signature

    (B) Schnorr digital signature

    (C) Elliptic curve digital signature

    (D) RSA approach

    (E) Answer not known

184. Match the following NIST standard with corresponding Personal Identity Verification (PIV) specification :

   (a) FIPS 201-2   1. Cryptographic algorithm and key size for PIV
   (b) SP 800-73-3   2. Interfaces for PIV
   (c) SP 800-76-2   3. PIV of Federal Employees and contractors
   (d) SP 800-78-3   4. Biometric Data specification for PIV

	(a)	(b)	(c)	(d)
(A)	3	2	4	1
(B)	2	1	3	4
(C)	4.	3	1	.2
(D)	1	4	2	3

   (E) Answer not known

185. What is the another name of "nonce" in message passing?

   (A) Token   (B) Challenge
   (C) Message   (D) Data
   (E) Answer not known

186. 5-4-3 principles of cloud computing was proposed by

   (A) Research Centre for Automatic Control (CRAN)
   (B) International Council on Systems ENGINEERING (INCOSE)
   (C) National Institute of Standards and Technology (NIST)
   (D) International Society for the Systems Sciences (ISSS)
   (E) Answer not known

187. ――――――― is an object oriented cloud platform for transdisciplinary service absractions proposed by Michael Sobolewski

(A) Service – Oriented Computing Environment (SORCER)

(B) Erlang

(C) MultiMLton

(D) Cloud Haskell

(E) Answer not known

188. Which is a set of commonly used open source system for building web applications?

(A) Microsoft.net

(B) J2EE

(C) LAMP

(D) G-Eclipse

(E) Answer not known

189. Which are ensures that users are charged for the resources they request and use?

(A) Licensing

(B) Metering

(C) Renting

(D) Scaling

(E) Answer not known

190. ――――――― are software tools used to create the virtual machines and they produce the virtualization of various hardware resources.

(A) Hypervisor

(B) Supervisor

(C) Server utilities

(D) Network utilities

(E) Answer not known

191. Which one is not related to control strategies in AI?

    (A) Good control strategy should course motion and systematic

    (B) Depth first search

    (C) Breath first search

    (D) Aggregation

    (E) Answer not known

192. Name the knowledge representation used here

Man(marcus)

$$\forall_x = man(X) \rightarrow mortal \ (x)s$$

    (A) Relational knowledge

    (B) Inheritance knowledge

    (C) Inferential knowledge

    (D) Procedural knowledge

    (E) Answer not known

193. The nondeductive inference method based on the assumption that a recurring pattern, observed for some event or entity, implies that the pattern is true for all entities in the class is known as —————.

    (A) Analogical inference

    (B) Inductive inference

    (C) Abductive inference

    (D) Unified inference

    (E) Answer not known

194. Which one of the following is related to minimax search procedure?

(A) Depth first

(B) Depth first, depth limited search procedure ✓

(C) Breath first

(D) Breadth first, breadth limited search procedure

(E) Answer not known

195. To modify the branch-and-bound strategy to include two bounds one for each of the players is called as

(A) gradient pruning

(B) monotonic pruning

(C) essential pruning

(D) alpha-beta pruning ✓

(E) Answer not known

196. What was the name of relationship, which relates a class to one or more other classes that are guaranteed to have no elements in common with it?

(A) Is – Covered – by
(B) Partition – of

(C) Mutually – disjoint – with ✓
(D) Uniform – partition – of

(E) Answer not known

197. Which one is a wrong statement related to production system?

(A) Production system consist of set of rules

(B) Production system consist of one or more knowledge database

(C) Production system consist of control strategy

(D) Production system consist of a set of modules ✓

(E) Answer not known

198. _____ is a search process starts at the root and explores as far as possible along each branch before backtracking.

    (A)   Depth first search

    (B)   Breath first search

    (C)   Top down search

    (D)   Bottom up search

    (E)   Answer not known

199. Which of the following search strategies is called as blind search?

    (A)   Informed search   (B) Uninformed search

    (C)   Simple reflex search   (D) Bidirectional search

    (E)   Answer not known

200. Which of the following is a partially commutative and Non monotonic production system?

    (A)   Theorem proving   (B) Robot navigation

    (C)   Chemical synthesis   (D) Bridge

    (E)   Answer not known

———————