



## Dr.G.R.Damodaran College of Science

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CRISL rated 'A' (TN) for MBA and MIB Programmes

I BSc(Computer Science)[2017-2020]

Semester - II

Allied:DISCRETE MATHEMATICS - 207D

Multiple Choice Questions.

1. If there are  $n$  distinct components in a statement then there are \_\_\_\_\_ combinations of values in the truth table.

- A.  $2^n$
- B.  $n+1$
- C.  $n$
- D.  $n+2$

ANSWER: A

2. If  $P$  then  $Q$  is called \_\_\_\_\_ statement

- A. Conjunction
- B. disjunction
- C. conditional
- D. bi conditional

ANSWER: C

3.  $(P \rightarrow Q) \rightarrow (\wedge Q)$  is \_\_\_\_\_.

- A. not a well formed formula
- B. tautology
- C. contradiction
- D. well formed formula

ANSWER: A

4. A relation  $R$  in a set  $X$  is symmetric if \_\_\_\_\_.

- A.  $xRy, yRz \Rightarrow xRz$ .
- B.  $xRy$
- C.  $xRy \Rightarrow yRx$
- D.  $xRx$

ANSWER: C

5. If a relation is reflexive, then all the diagonal entries in the relation matrix must be \_\_\_\_\_.

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

ANSWER: B

6. If R is reflexive, symmetric and transitive then the relation is said to be \_\_\_\_\_.

- A. Binary relation
- B. Compatibility relation
- C. Equivalence relation
- D. Partial order relation

ANSWER: C

7.  $S \rightarrow aAB$ ,  $AB \rightarrow bB$ ,  $B \rightarrow b$ ,  $A \rightarrow aB$  satisfies \_\_\_\_\_ type of grammar

- A. 0
- B. 1
- C. 0,1
- D. 2

ANSWER: C

8. If there are more than 2 LMD for a string then it is said to be \_\_\_\_\_.

- A. Ambigious
- B. unambigious
- C. language
- D. finite state automata

ANSWER: A

9. A finite non-empty set of symbols is called \_\_\_\_\_.

- A. alphabet
- B. letter
- C. string
- D. language

ANSWER: A

10. The specification of proper construction of a sentence is called \_\_\_\_\_.

- A. alphabet
- B. letter
- C. syntax
- D. word

ANSWER: C

11. Context free grammar is also known as \_\_\_\_\_ grammar.

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

ANSWER: C

12. A class of machine which accepts a \_\_\_\_\_ language is called finite state automata.

- A. type 0
- B. type 1
- C. type 2

D. type 3

ANSWER: D

13. Accepting states are denoted by \_\_\_\_\_.

- A. circle
- B. an arrow mark
- C. double circle
- D. straight line

ANSWER: C

14. For converting NFA to DFA we should \_\_\_\_\_ all the states which have no incoming.

- A. add
- B. subtract
- C. multiply
- D. delete

ANSWER: D

15. The set of all finite words over E is denoted by \_\_\_\_\_.

- A.  $E^+$
- B.  $E^*$
- C. E
- D.  $E^-$

ANSWER: A

16. Surjective function is also called \_\_\_\_\_.

- A. onto
- B. into
- C. one to one
- D. one one onto

ANSWER: A

17. One to one onto function is also called \_\_\_\_\_.

- A. bijective
- B. injective
- C. surjective
- D. composite function

ANSWER: A

18. The composition of function is associative but not \_\_\_\_\_.

- A. commutative
- B. associative
- C. distributive
- D. idempotent

ANSWER: A

19. A mapping x into itself is called \_\_\_\_\_.

- A. reflexive
- B. symmetric

- C. transitive
- D. equivalence

ANSWER: A

20. The duality law of  $(P \wedge Q) \vee T$  is \_\_\_\_\_.

- A.  $(P \wedge Q) \wedge T$
- B.  $(P \vee Q) \wedge T$
- C.  $(P \vee Q) \vee F$
- D.  $(P \vee Q) \wedge F$

ANSWER: D

21. A sum of the variables and their negations in a formula is called \_\_\_\_\_.

- A. elementary sum
- B. elementary product
- C. cnf
- D. dnf

ANSWER: A

22. A premise may be introduced at any point in the derivation is called \_\_\_\_\_.

- A. Rule P
- B. Rule P and Rule T
- C. Rule T
- D. Rule CP

ANSWER: A

23. A product of the variables and their negations in a formula is called \_\_\_\_\_.

- A. elementary product
- B. elementary sum
- C. cnf
- D. dnf

ANSWER: A

24. Min-terms of two statements are formed by introducing the connective \_\_\_\_\_.

- A. Conjunction
- B. disjunction
- C. Conditional
- D. negation

ANSWER: A

25. Any vertex having degree one is called \_\_\_\_\_.

- A. Simple vertex
- B. pendent vertex
- C. regular vertex
- D. complete vertex

ANSWER: B

26. A graph that has neither self loops nor parallel edges is called \_\_\_\_\_ graph.

- A. regular

- B. simple
- C. complete
- D. null

ANSWER: B

27. A graph in which every vertex has same degree is called \_\_\_\_\_graph.

- A. regular
- B. simple
- C. complete
- D. null

ANSWER: A

28. Kn denotes \_\_\_\_\_graph.

- A. regular
- B. simple
- C. complete
- D. null

ANSWER: C

29. The number of vertices of odd degree in a graph is always\_\_\_\_\_.

- A. odd
- B. even
- C. zero
- D. one

ANSWER: B

30. A path of a graph is said to be \_\_\_\_\_ if it contains all the edges of the graph.

- A. eulerian
- B. hamiltonian
- C. tournament
- D. planar

ANSWER: A

31. Traveling salesman problem is example for\_\_\_\_\_graph.

- A. eulerian
- B. hamiltonian
- C. tournament
- D. planar

ANSWER: B

32. If a node v is reachable from node u then the path of minimum length u to v is called \_\_\_\_\_.

- A. reachability
- B. node base
- C. geodesic
- D. accessibility

ANSWER: C

33. The eccentricity of a center in a tree is defined as \_\_\_\_\_ of the tree.

- A. radius
  - B. diameter
  - C. length
  - D. path
- ANSWER: A

34.  $P \rightarrow Q, Q \rightarrow R$  then \_\_\_\_\_.

- A.  $P \rightarrow R$
- B.  $R \rightarrow P$
- C. Q
- D. R

ANSWER: A

35. If a normal form contains all minterms, then it is \_\_\_\_\_.

- A. a tautology
- B. a contradiction
- C. a contingency
- D. both a and b

ANSWER: A

36. PCNF is also called \_\_\_\_\_.

- A. sum of product canonical form.
- B. product of sum canonical form
- C. sum canonical form
- D. product canonical form

ANSWER: B

37. PDNF is also called \_\_\_\_\_.

- A. sum of product canonical form
- B. product of sum canonical form
- C. sum canonical form
- D. product canonical form

ANSWER: A

38. Max-terms of two statements are formed by introducing the connective \_\_\_\_\_.

- A. disjunction
- B. conjunction
- C. negation
- D. conditional

ANSWER: A

39. The Subset relation on a set of sets is \_\_\_\_\_.

- A. partial ordering
- B. equivalence relation
- C. reflexive and symmetric only
- D. symmetric and transitive only

ANSWER: A

40. A relation R is defined on the set of integers as  $xRy$  if and only if  $(x+y)$  is even. Which of the following statement is TRUE?

- A. R is not an equivalence relation.
- B. R is an equivalence relation having one equivalence classes
- C. R is an equivalence relation having two equivalence classes
- D. R is an equivalence relation having three equivalence classes

ANSWER: C

41. If  $R = \{(1, y), (1, z), (3, y)\}$  then  $R$  power  $(-1) =$  \_\_\_\_\_.

- A.  $\{(1, a), (y, z)\}$
- B.  $\{(y, 1), (z, 1), (y, 3)\}$
- C.  $\{(y, a), (1, z), (3, y)\}$
- D.  $\{(y, a), (z, a), (3, y)\}$

ANSWER: B

42. Let  $R = \{(a,b),(c,d),(b,b)\}$ ,  $S = \{(d,b),(c,b),(a,d)\}$  then  $R$  composite  $S =$  \_\_\_\_\_

- A.  $\{(a,e),(c,b),(b,e)\}$
- B.  $\{(d,b),(c,b),(a,d)\}$
- C.  $\{(a,b),(b,b)\}$
- D.  $\{(c,b)\}$

ANSWER: D

43. Let R and S be two relations on a set of positive integers I. If  $R = \{(a, 3a+a)\}$ ,  $S = \{(a,a+a)\}$  then R composition R composition R = \_\_\_\_\_.

- A.  $\{(a,3a+a)\}$
- B.  $\{(a,9a+a)\}$
- C.  $\{(a,27a+a)\}$
- D.  $\{(a,9a+c)\}$

ANSWER: C

44. The number of relations from  $A = \{a,b,c\}$  to  $B = \{1,2\}$  are \_\_\_\_\_.

- A. 6
- B. 8
- C. 32
- D. 64

ANSWER: D

45. The minimum number of edges in a connected graph with n vertices is \_\_\_\_\_.

- A. n
- B. n-1
- C. n+1
- D. n+2

ANSWER: B

46. The number of distinct simple graphs with up to three nodes is \_\_\_\_\_.

- A. 7
- B. 9
- C. 15

D. 25

ANSWER: A

47. A graph is planar if and only if it does not contain \_\_\_\_\_.

- A. subgraphs homeomorphic to  $K_3$  &  $K_{3,3}$
- B. subgraphs isomorphic to  $K_5$  or  $K_{3,3}$
- C. subgraphs isomorphic to  $K_3$  &  $K_{3,3}$
- D. sub graphs homeomorphic to  $K_5$  or  $K_{3,3}$

ANSWER: D

48. Maximum number of edges in an n-node undirected graph without self loops is \_\_\_\_\_.

- A.  $[n(n-1)]/2$
- B.  $n-1$
- C.  $n$
- D.  $[n(n+1)]/2$

ANSWER: A

49. Number of distinct nodes in any elementary path of length p is \_\_\_\_\_.

- A.  $p$
- B.  $p-1$
- C.  $p+1$
- D.  $p*1$

ANSWER: C

50. The total number of edges in a complete graph of n vertices is \_\_\_\_\_.

- A.  $n$
- B.  $n/2$
- C.  $[n(n-1)]/2$
- D.  $[n(n-1)]/2$

ANSWER: D

51. A directed complete graph of n vertices contains \_\_\_\_\_.

- A. one arrow between each pair of distinct vertices
- B. two arrows between each pair of distinct vertices
- C.  $n-1$  arrows between each pair of distinct vertices
- D. path between every two distinct vertices

ANSWER: A

52. A directed graph  $G = (V, E)$  is said to be finite if its \_\_\_\_\_.

- A. set V of vertices is finite
- B. set V of vertices & set E of edges are finite
- C. set E of edges are finite
- D. no vertices & edges are repeated

ANSWER: A

53. A state from which a deterministic finite state automata can never come out is called a \_\_\_\_\_.

- A. trap state
- B. starting symbol



- C. transition table
- D. transition diagram

ANSWER: A

54. If a compound statement is made up of three simple statements then the number of rows in the truth table is \_\_\_\_\_.

- A. 2
- B. 4
- C. 6
- D. 8

ANSWER: D

55. Let  $R = \{(3, 3), (6, 6), (9, 9), (12,12), (3,6), (6,3), (3, 9), (9, 3), (9, 12),(12,9)\}$  be a relation on the set  $A = \{3, 6, 9, 12\}$ . The relation is \_\_\_\_\_

- A. reflexive and transitive
- B. reflexive and symmetric
- C. symmetric and transitive
- D. equivalence relation

ANSWER: D

56. Let  $R=\{(1,b),(3,d),(2,b)\}$  and  $S=\{(b,4),(2,5),(d,a)\}$  be a relation then  $R$  composition  $S=$ \_\_\_\_\_.

- A.  $\{(1,b),(3,d),(2,b)\}$
- B.  $\{(1,4),(3,a),(2,4)\}$
- C.  $\{(4,b),(2,5),(3,a)\}$
- D.  $\{(1,d),(3,b),(2,c)\}$

ANSWER: B

57. If  $R= \{(x, 2x)\}$  and  $S= \{(x, 4x)\}$  then  $R$  composition  $S=$ \_\_\_\_\_.

- A.  $\{(x, 4x)\}$
- B.  $\{(x, 2x)\}$
- C.  $\{(x, 8x)\}$
- D.  $\{(x, 10x)\}$

ANSWER: C

58. If  $R= \{(x, 2x)\}$  and  $S= \{(x, 5x)\}$  then  $R$  composition  $S=$ \_\_\_\_\_.

- A.  $\{(x, 4x)\}$
- B.  $\{(x, 2x)\}$
- C.  $\{(x, 8x)\}$
- D.  $\{(x, 10x)\}$

ANSWER: D

59. A regular grammar contains rules of the form \_\_\_\_\_.

- A.  $A$  tends to  $AB$
- B.  $AB$  tends to  $a$
- C.  $A$  tends to  $aB$
- D.  $AB$  tends to  $CD$

ANSWER: C

60. A type-2 grammar contains the rules of the form is\_\_\_\_\_.

- A. a tends to AB
- B. AaB tends to a
- C. A tends to aBC
- D. AB tends to CD

ANSWER: C

61. Let  $R = \{(1, 3), (4, 2), (2, 2), (3, 3), (1, 1), (4, 4)\}$  be a relation on the set  $A = \{1, 2, 3, 4\}$ . The relation R is \_\_\_\_\_.

- A. transitive
- B. reflexive
- C. not symmetric
- D. function

ANSWER: C

62. The NAND statement is a combination of \_\_\_\_\_.

- A. NOT and AND
- B. NOT and OR
- C. AND and OR
- D. NOT or OR

ANSWER: A

63. The NOR statement is a combination of \_\_\_\_\_.

- A. NOT and AND
- B. NOT and OR
- C. AND and OR
- D. NOT or OR

ANSWER: B

64. If a relation is reflexive then in the graph of a relation there must be a loop at \_\_\_\_\_.

- A. each node
- B. only first node
- C. any two nodes
- D. only first and last nodes

ANSWER: A

65. Which of the following traversal techniques lists the nodes of binary search in ascending order?

- A. pre order
- B. post order
- C. in order
- D. root order

ANSWER: C

66. The grammar  $G = \{\{S\}, \{0,1\}, P, S\}$  where  $P = \{S \text{ tends to } 0S1, S \text{ tends to } S1\}$  is a \_\_\_\_\_.

- A. recursively enumerable grammar.
- B. regular grammar
- C. context sensitive grammar
- D. context free grammar

ANSWER: D

67. Which of the following regular expressions identifiers are true?

- A.  $(r^*)^* = r$
- B.  $(r+s)^* = r^* \cdot s^*$
- C.  $r^* \cdot s^* = r^* + s^*$
- D.  $(r.s)^* = r^*/s^*$

ANSWER: A

68. In a grammar or language LAMDA is used to denote \_\_\_\_\_.

- A. empty word
- B. entire set
- C. set of words
- D. set of letters

ANSWER: A

69. The number of letters in a word is called \_\_\_\_\_.

- A. length
- B. string
- C. syntax
- D. alphabet

ANSWER: A

70. If  $r$  is a regular expression then  $r^*$  is a \_\_\_\_\_ expression.

- A. regular
- B. irregular
- C. isomorphic
- D. homomorphic

ANSWER: A

71. An example for regular grammar is \_\_\_\_\_.

- A.  $S \rightarrow Ab$
- B.  $AB \rightarrow SAB$
- C.  $S \rightarrow aB$
- D.  $S \rightarrow aBB$

ANSWER: C

72. If all the productions have single non-terminal in the left hand side then the grammar defined is \_\_\_\_\_ grammar.

- A. context free
- B. context sensitive
- C. regular
- D. phrase structure

ANSWER: A

73. In Backus Naur Form the symbol  $:: =$  is used instead of \_\_\_\_\_.

- A.  $\{ \}$
- B. tends to

C.  $\langle \rangle$

D. \$

ANSWER: B

74. Any subset L of  $A^*$  is called \_\_\_\_\_ over A.

A. Language

B. Syntax

C. Alphabet

D. Word

ANSWER: A

75. Let S be a start symbol and  $S \rightarrow aA$ ,  $A \rightarrow BA$ ,  $A \rightarrow a$ ,  $B \rightarrow b$  be the productions in a grammar then one of the string derived form the grammar is \_\_\_\_\_.

A. baba

B. bbaa

C. abba

D. aabb

ANSWER: C

76. If S is a start symbol and  $S \rightarrow AB$ ,  $A \rightarrow aB$ ,  $B \rightarrow b$  are the productions then a string generated by the grammar is \_\_\_\_\_.

A. baa

B. aba

C. abb

D. bab

ANSWER: C

77. In FSA ,the notation for M being in state  $S_0$ , reading the input symbol a, moving one cell right and reaching the state  $S_1$  is given by \_\_\_\_\_.

A.  $f(S_i, x) = S_j$

B.  $f(S_0, a) = S_1$

C.  $f(S_i, a) = S_j$

D.  $f(S_0, x) = S_1$

ANSWER: B

78. If " $S \rightarrow aS$ ,  $S \rightarrow a$ " are the productions in a grammar G, then the grammar is called\_\_\_\_\_.

A. regular grammar

B. phrase structure grammar

C. context free grammar

D. context sensitive grammar

ANSWER: A

79. The rank of the incidence matrix of any connected graph G with n vertices is \_\_\_\_\_.

A. n

B. n+1

C. n-1

D. n-2

ANSWER: C

80. The number of 1's in each row of an incidence matrix of a graph G is equal to \_\_\_\_\_.  
A. the degree of the corresponding vertices  
B. the sum of degrees of all vertices  
C. the degree of the initial vertex  
D. the degree of the terminal vertex

ANSWER: A

81. Each column of an incidence matrix of a graph G has exactly \_\_\_\_\_.  
A. one 1's  
B. two 1's  
C. one 2's  
D. two 2's

ANSWER: B

82. An undirected graph is tripartite if and only if it has no circuits of \_\_\_\_\_ lengths  
A. odd  
B. even  
C. distinct  
D. equal

ANSWER: A

83. A graph is bipartite if and only if its chromatic number is \_\_\_\_\_.  
A. 1  
B. 2  
C. odd  
D. even

ANSWER: B

84. G is strongly connected implies \_\_\_\_\_.  
A. G is unilaterally connected.  
B. G is bilaterally connected  
C. G is unilaterally connected  
D. G has more than one component

ANSWER: A

85. The number of pendant vertices in a full binary tree with n vertices is \_\_\_\_\_.  
A.  $(n-1)/2$   
B.  $(n-1)/2$   
C.  $(n+1)/2$   
D.  $n/2$

ANSWER: C

86. The number of vertices in a full binary tree is \_\_\_\_\_.  
A. odd  
B. even  
C. equal  
D. 0

ANSWER: A

87. A binary tree with  $2k$  vertices of level  $k$  has at least \_\_\_\_\_ vertices.

- A.  $2^k$
- B.  $2^{k-1}$
- C.  $2^{k-1}-1$
- D.  $2^{k+1}-1$

ANSWER: D

88. For a symmetric digraph, the adjacency matrix is \_\_\_\_\_.

- A. symmetric
- B. antisymmetric
- C. asymmetric
- D. symmetric and asymmetric

ANSWER: A

89. The diagonal entries of  $A A^T$  where  $A$  is the adjacency matrix are the \_\_\_\_\_.

- A. outdegrees of the node
- B. indegrees of the nodes
- C. unit degree of the nodes
- D. in & out degrees of the nodes

ANSWER: A

90. DFSA and NDFSFA represent the \_\_\_\_\_ language.

- A. regular
- B. context free
- C. context sensitive
- D. phrase structure

ANSWER: A

91. The chromatic number of the chess board is \_\_\_\_\_.

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

ANSWER: B

92. The total number of degrees of an isolated node is \_\_\_\_\_.

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

ANSWER: A

93. If  $G$  is a connected planar graph then it has a vertex of degree \_\_\_\_\_.

- A. 3 or less
- B. 4 or less
- C. 5 or less

D. 6 or less

ANSWER: C

94. A product of the variable and their negation in a formula is called \_\_\_\_\_.

- A. an elementary sum
- B. an elementary product
- C. a well-formed formula
- D. an equivalence of relation formula

ANSWER: B

95. A formula consisting of disjunctions of min-terms is called \_\_\_\_\_.

- A. DNF
- B. CNF
- C. PDNF
- D. PCNF

ANSWER: C

96. The less than relation  $<$  on real is \_\_\_\_\_.

- A. a partial ordering since it is asymmetric and reflexive
- B. a partial ordering since it is anti-symmetric and reflexive
- C. not a partial ordering since it is not asymmetric and not reflexive
- D. not a partial ordering since it is not anti-symmetric and not reflexive

ANSWER: D

97. A relation  $R$  in  $X$  is said to be a \_\_\_\_\_, if it is reflexive and symmetric.

- A. void relation
- B. circular
- C. partial order relation
- D. compatibility relation

ANSWER: D

98. The set  $X \times X$  itself defines a relation in  $X$  is called a \_\_\_\_\_ relation.

- A. void
- B. universal
- C. partial
- D. equivalence

ANSWER: B

99. A self complemented distributive lattice is called \_\_\_\_\_.

- A. boolean algebra
- B. modular lattice
- C. complete lattice
- D. self dual lattice

ANSWER: A

100. Every finite subset of a lattice has \_\_\_\_\_.

- A. a Least Upper Bound and Greatest Lower Bound
- B. many Least Upper Bounds and a Greatest Lower Bound

- C. many Least Upper Bounds and many Greatest Lower Bounds
- D. either some Least Upper Bounds or some Greatest Lower Bounds

ANSWER: A

101. If the lattice  $(C, \leq)$  is complemented chain then \_\_\_\_\_.

- A.  $|C| \leq 1$
- B.  $|C| \leq 2$
- C.  $|C| > 1$
- D. C doesn't exist

ANSWER: B

102. A formula consisting of conjunctions of max-terms is called \_\_\_\_\_.

- A. DNF
- B. CNF
- C. PCNF
- D. PDNF

ANSWER: C

103. The set of all divisors of 24 are \_\_\_\_\_.

- A.  $\{1, 2, 3, 4, 6, 8, 12, 24\}$
- B.  $\{2, 3, 4, 6, 8, 12\}$
- C.  $\{1, 3, 6, 12, \}$
- D.  $\{2, 4, 6, 8\}$

ANSWER: A

104. Which of the following is Absorption Law?

- A.  $a * a \Leftrightarrow a$
- B.  $a + (a * b) \Leftrightarrow a$
- C.  $a * b \Leftrightarrow a * a$
- D.  $(a * b) * c \Leftrightarrow a * (b * c)$

ANSWER: B

105. In a bounded lattice, an element  $b$  belongs to  $L$  is called a complement of an element  $a$  belongs to  $L$  if \_\_\_\_\_.

- A.  $a * b = 0$
- B.  $a + b = 1$
- C. both a and b
- D. none

ANSWER: C

106. If each non-empty subset of a lattice has a least upper bound and greatest lower bound then the lattice is called \_\_\_\_\_.

- A. complete
- B. associative
- C. absorption
- D. commutative

ANSWER: A



107. A \_\_\_\_\_ is a complemented distributive lattice.

- A. boolean homomorphism
- B. boolean algebra
- C. boolean isomorphism
- D. boolean function

ANSWER: D

108. Boolean expression except 0 expressed in an equivalent form is called \_\_\_\_\_.

- A. canonical
- B. sum
- C. product
- D. standard

ANSWER: A

109. \_\_\_\_\_ relations are useful in solving certain minimization problems of switching theory.

- A. Void
- B. Universal
- C. Compatibility
- D. Equivalence

ANSWER: C

110. The number of elements in a square matrix of order n is \_\_\_\_\_.

- A. n power 3
- B. n power 4
- C. n power 5
- D. n power 2

ANSWER: D

111. Every non-trivial tree has at least \_\_\_\_\_ vertices of degree one.

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

ANSWER: B

112. A \_\_\_\_\_ is an edge e such that  $w(G-e) > w(G)$ .

- A. cut vertex of G
- B. cut edge of G
- C. ends of G
- D. path of G

ANSWER: B

113. Every connected graph contains a \_\_\_\_\_.

- A. tree
- B. sub tree
- C. spanning tree
- D. spanning subtree

ANSWER: C

114. A minimal non-empty edge cut of  $G$  is called a \_\_\_\_\_.

- A. bond
- B. cycle
- C. path
- D. tour

ANSWER: A

115. A connected graph that has no cut vertices is called a \_\_\_\_\_.

- A. block
- B. bond
- C. cycle
- D. tour

ANSWER: A

116. Every block with at least three vertices are \_\_\_\_\_ connected.

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

ANSWER: B

117. A graph is Eulerian if it contains \_\_\_\_\_.

- A. Euler tour
- B. Euler trail
- C. Hamiltonian path
- D. Euler path

ANSWER: A

118. Hamilton cycle is a cycle that contains every \_\_\_\_\_ of  $G$ .

- A. path
- B. cycle
- C. vertex
- D. edge

ANSWER: C

119. Collection of human beings with 4 heads, 2 legs and two hands is a \_\_\_\_\_.

- A. null set
- B. finite set
- C. infinite set
- D. equal set

ANSWER: A

120. A set containing no element is called \_\_\_\_\_.

- A. null set
- B. finite set
- C. infinite set
- D. equal set

ANSWER: A

121.  $A = \{1,3,5,7,9\}$  is a \_\_\_\_\_.

- A. null set
- B. finite set
- C. singleton set
- D. infinite set

ANSWER: B

122. The number of Indians in the world is \_\_\_\_\_.

- A. finite set
- B. universal set
- C. infinite set
- D. equal set

ANSWER: A

123. If in the truth table the answer column has the truth values both TRUE and FALSE then it is said to be \_\_\_\_\_.

- A. tautology
- B. contradiction
- C. contingency
- D. equivalence relation

ANSWER: C

124. To prove the statement P tautologically implies the statement Q, it is enough to prove that \_\_\_\_\_.

- A. P conditional Q is a contradiction
- B. P conditional Q is a tautology
- C. P biconditional is a contradiction
- D. P biconditional Q is a tautology

ANSWER: B

125. To prove the statement P is tautologically equivalent to the statement Q, it is enough to prove that \_\_\_\_\_.

- A. P conditional Q is a contradiction
- B. P conditional Q is a tautology
- C. P biconditional Q is a contradiction
- D. P biconditional Q is a tautology

ANSWER: D

126. Let  $R = \{(1,2),(3,4),(2,6)\}$  and  $S = \{(4,3),(2,5),(6,6)\}$  be a relation then R composite S = \_\_\_\_\_.

- A.  $\{(1,5),(3,3),(2,6)\}$
- B.  $\{(1,5),(3,6),(2,5)\}$
- C.  $\{(4,4),(2,5),(3,3)\}$
- D.  $\{(1,1),(3,3),(2,2)\}$

ANSWER: A

127. The binary relation  $R = \{(0, 0), (1, a)\}$  on  $A = \{0, 1, 2, 3, \}$  is \_\_\_\_\_.

- A. reflexive, not symmetric, transitive

- B. not reflexive, symmetric, transitive
- C. reflexive, symmetric, not transitive
- D. reflexive, not symmetric, not transitive

ANSWER: B

128. There are only five distinct Hasse diagrams for partially ordered sets that contain \_\_\_\_\_ elements.

- A. 2
- B. 3
- C. 4
- D. 6

ANSWER: B

129. The production  $S \rightarrow aB$  is of the type \_\_\_\_\_ grammar.

- A. 0
- B. 1
- C. 2
- D. all the above

ANSWER: D

130. The production  $S \rightarrow A$  is of the type \_\_\_\_\_ grammar.

- A. 0
- B. 1
- C. 2
- D. all the above

ANSWER: A

131. A regular grammar contains rules of the form is \_\_\_\_\_.

- A.  $A \rightarrow AB$
- B.  $AB \rightarrow a$
- C.  $A \rightarrow aB$
- D.  $AB \rightarrow CD$

ANSWER: C

132. If an edge  $e$  is said to join the vertices  $u$  and  $v$  then the vertices  $u$  and  $v$  are called \_\_\_\_.

- A. initial vertices
- B. terminal vertices
- C. ends of  $e$
- D. all the above

ANSWER: B

133. Edges intersect only at their ends are called \_\_\_\_\_.

- A. planar
- B. loop
- C. link
- D. non planar

ANSWER: A

134. Two vertices which are incident with the common edge are called \_\_\_\_\_ vertices.

- A. distinct
- B. directed
- C. adjacent
- D. loops

ANSWER: C

135. An edge with identical ends is called \_\_\_\_\_.

- A. complete graph
- B. bipartite graph
- C. loops
- D. link

ANSWER: C

136. An edge with same ends is called \_\_\_\_\_.

- A. complete graph
- B. bipartite graph
- C. loops
- D. link

ANSWER: D

137. In a graph if few edges have directions and few do not have directions then the graph is called \_\_\_\_\_.

- A. multi graph
- B. directed graph
- C. undirected graph
- D. mixed graph

ANSWER: D

138. If two edges have same vertices as its terminal vertices those edges are called \_\_\_\_.

- A. parallel
- B. adjacent
- C. incident
- D. distinct

ANSWER: A

139. Each edge has one end in set X and one end in set Y then the graph (X, Y) is called \_\_\_\_\_ graph.

- A. bipartite
- B. simple
- C. complete
- D. trivial

ANSWER: A

140. The graph defined by the vertices and edges of a \_\_\_\_\_ is bipartite.

- A. square
- B. cube
- C. single
- D. both square and cube

ANSWER: B

141. To any graph  $G$  there corresponds a vertex in a matrix called \_\_\_\_\_matrix.

- A. incidence
- B. adjacency
- C. square
- D. null

ANSWER: A

142. If  $H$  is a sub graph of  $G$  then  $G$  is a \_\_\_\_\_ of  $H$ .

- A. proper sub graph
- B. inducted sub graph
- C. spanning subgraph
- D. super graph

ANSWER: D

143. If the graph  $G_1$  and  $G_2$  has no vertex in common then it is said to be \_\_\_\_\_.

- A. disjoint
- B. edge disjoint
- C. union
- D. intersection

ANSWER: A

144. The degree of vertex  $v$  in  $G$  is \_\_\_\_\_.

- A. number of edges of  $G$  incident with  $v$
- B. number of loops in  $G$
- C. number of links in  $G$
- D. number of sub graph in  $G$

ANSWER: A

145. If the edges of a walk  $W$  are distinct then  $W$  is called \_\_\_\_\_.

- A. path
- B. trial
- C. walk
- D. tour

ANSWER: D

146. If the vertices of a walk  $W$  are distinct then  $W$  is called \_\_\_\_\_.

- A. path
- B. trial
- C. walk
- D. tour

ANSWER: A

147. Each loop counting has \_\_\_\_\_ edges.

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

ANSWER: B

148. The statements that we consider initially are simple statements called \_\_\_\_\_ statements.

- A. molecular
- B. compound
- C. atomic
- D. simple

ANSWER: C

149. The statements formed from atomic statements are called \_\_\_\_\_ statements.

- A. molecular
- B. compound
- C. atomic
- D. simple

ANSWER: A

150. The negation of the statement is formed by introducing \_\_\_\_\_.

- A. not
- B. and
- C. or
- D. if

ANSWER: A

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