

JNTU ONLINE EXAMINATIONS [Mid 2 - Software Testing Methodologies]

1. **$A + 1 = 1$ is an example for**
 - a. absorption law
 - b. distributive law
 - c. commutative law
 - d. **identity law**
2. **$ac + abc + abbc + abbbc + = ?$**
 - a. $ac*b$
 - b. $a*bc$
 - c. **$ab*c$**
 - d. $abc*$
3. **Path product for $X = abcde$ and $Y = def$ is $XY = ?$**
 - a. $abcdef$
 - b. $abcde$
 - c. def
 - d. **$abcdedef$**
4. **$(B+C).D = BD + BD$ is an example for**
 - a. absorption law
 - b. **distributive law**
 - c. commutative law
 - d. identity law
5. **$X + X = X$ is an example for**
 - a. **absorption law**
 - b. distributive law
 - c. commutative law
 - d. identity law
6. **An algebraic representation of sets of paths in a graph is called a**
 - a. **path expression**
 - b. path predicate
 - c. path node
 - d. path link
7. **A letter or a sequence of letters that denote the sequence of data-flow actions on a link is called**
 - a. link expression
 - b. **link weight**
 - c. link width
 - d. link height
8. **The path sum denotes**
 - a. paths in a sequence
 - b. paths that are perpendicular
 - c. **paths in parallel**
 - d. no paths
9. **An infinite set of parallel paths can also be called as**
 - a. sequence
 - b. condition variable
 - c. conditional statement
 - d. **loop**
10. **With suitable arithmetic laws and weights, path expressions are converted into algebraic functions that are called**
 - a. sequential expressions
 - b. **regular expressions**
 - c. path expressions
 - d. irregular expressions
11. **If node A consists of a link a and node B consists of a link b then which of the following denotes $(A^2+B^2)^2$?**
 - a. **$a^4+a^2b^2+b^2a^2+b^4$**
 - b. $a^3+b^3+a^2b^2+b^2a^2$
 - c. $a^2+b^2+a^2b^2+b^2a^2$
 - d. $a^2b^2+b^2a^2+a+b$
12. **If node A consists of a link a and node B consists of a link b then which of the following denotes $(A+B)^2$?**
 - a. $aa+ab+bb+ba$
 - b. $aa+ab+bc+cd$
 - c. **$ab+bd+cd+da$**

- d. $ab+bc+cd+ac$
13. On the basis of distributive law, $(a+b)(c+d) = ?$
- a. $ab+bc+cd+bcb$
 b. $ab+ac+ad+bc$
 c. **$ac+ad+bc+bd$**
 d. $ba+bc+bd+cd$
14. $A + AB + ABC + ABCD + ABCDE$ can be reduced to
- a. 1
 b. 0
 c. **A**
 d. ABCDE
15. Which of the following forms a correct sequence of steps for the reduction procedure of a flowgraph into a path expression?
- a. combine all parallel links, combine all serial links, and remove all self loops.
 b. **combine all parallel links, remove all self loops, and combine all serial links.**
 c. combine all serial links, combine all parallel links, and remove all self loops.
 d. combine all serial links, remove all self loops, and combine all parallel links.
16. The fundamental step of the reduction algorithm for converting a flow graph into a path expression is
- a. reduction step
 b. **cross-term step**
 c. tracing step
 d. backtracking step
17. In the reduction procedure for converting a flow graph into path expressions, all serial links are combined by
- a. dividing their paths expressions
 b. subtracting their path expressions
 c. **multiplying their path expressions**
 d. adding their path expressions
18. In the reduction procedure for converting a flow graph into path expressions, all parallel links are combined by
- a. dividing their paths expressions
 b. subtracting their path expressions
 c. multiplying their path expressions
 d. **adding their path expressions**
19. Reduced form of $(a + b).(b+1) = ?$
- a. $ab + b$
 b. $ab + a + b$
 c. **$a + b$**
 d. 1
20. The cross-term step of the reduction algorithm for converting a flow graph into path expressions is also called as
- a. ring transformation
 b. star transformation
 c. mesh transformation
 d. **star-mesh transformation**
21. Which of the following sets corresponds to the parallel, series, and loop cases respectively with regard to the maximum path count arithmetic?
- a. W_A+W_B , Sum from $j=0$ to $n(W_Aj)$, W_AW_B
 b. Sum from $j=0$ to $n(W_Aj)$, W_AW_B , W_A+W_B
 c. Sum from $j=0$ to $n(W_Aj)$, W_A+W_B , W_AW_B
 d. **W_A+W_B , W_AW_B , Sum from $j=0$ to $n(W_Aj)$**
22. Which of the following sets corresponds to the parallel, series, and loop cases respectively with regard to the lower path count arithmetic?
- a. $(1, W_1)$, W_A+W_B , $MAX(W_A, W_B)$
 b. $MAX(W_A, W_B)$, W_A+W_B , $(1, W_1)$
 c. $MAX(W_A, W_B)$, $(1, W_1)$, W_A+W_B
 d. **W_A+W_B , $MAX(W_A, W_B)$, $(1, W_1)$**
23. Using lower path count arithmetic for the case of parallel links with a path expression $A+B$, the weight expression could be
- a. **W_A+W_B**
 b. W_AW_B
 c. W_A*W_B*

- d. $(W_A W_B)^*$
24. Using lower path count arithmetic for the case of serial links with a path expression AB, the weight expression could be
- $W_A + W_B$
 - $W_A W_B$
 - $W_A * W_B^*$
 - $\text{MAX}(W_A, W_B)$**
25. Using lower path count arithmetic for the case of a loop, the weight expression could be
- 1
 - W_1
 - 1, W_1**
 - $1 + W_1$
26. A flow graph that can be reduced to a single link by successive application of transformations is called
- sequential flowgraph
 - ordered flowgraph
 - structured flowgraph**
 - random flowgraph
27. For a simple loop, if the loop takes a mean of N times, the looping probability is
- $1/(N+1)$
 - $2/(N+1)$
 - $N/(N+1)$**
 - $(N+1)/N$
28. For a simple loop, if the loop takes a mean of N times, the probability of not looping is
- $1/(N+1)$**
 - $2/(N+1)$
 - $N/(N+1)$
 - $(N+1)/N$
29. Using maximum path count arithmetic for the case of parallel links with a path expression A+B, the weight expression could be
- $W_A + W_B$**
 - $W_A W_B$
 - $W_A * W_B^*$
 - $(W_A W_B)^*$
30. Using maximum path count arithmetic for the case of serial links with a path expression AB, the weight expression could be
- $W_A + W_B$
 - $W_A W_B$**
 - $W_A * W_B^*$
 - $(W_A W_B)^*$
31. $G(G+R)G(GR)^*GGR^*R$ can be reduced to
- $(G^3+G)R^*$
 - $(G^4+G^2)R^*$**
 - $(G^2+G)R^*$
 - GR^*
32. Which of the following weight expression sets correspond to the parallel, series, and loop cases respectively with respect to the push/pop arithmetic?
- $W_A W_B, W_A + W_B, W_A^*$
 - $W_A W_B, W_A^*, W_A + W_B$
 - $W_A + W_B, W_A W_B, W_A^*$**
 - $W_A^*, W_A + W_B, W_A W_B$
33. The weight expression for the mean processing time of a series case can be given by
- $T_A + B = T_A + T_B$**
 - $T_A T_B$
 - $T_A T_B = (P_A T_A + P_B T_B) / (P_A + P_B)$
 - $T_A = T_A + T_L P_L / (1 - P_L)$

34. The weight expression for the mean processing time of a loop case can be given by

- a. $T_A + B = T_A + T_B$
- b. $T_A T_B$
- c. $T_A T_B = (P_A T_A + P_B T_B) / (P_A + P_B)$
- d. $T_A = T_A + T_L P_L / (1 - P_L)$

35. If A can be done with a probability of P_A and B can be done with a probability of P_B then either of them can be done with a probability of

- a. $P_A P_B$
- b. P_A / P_B
- c. $P_A - P_B$
- d. $P_A + P_B$

36. If P_A is the probability of a link leaving the loop and P_L is the probability of loop then

- a. $P_A = 1 + P_L$
- b. $P_A = 1 - P_L$
- c. $P_A = P_L$
- d. $P_L = 1 + P_A$

37. The weight expression for the parallel case based on the probability of A and B can be given by

- a. $P_A P_B$
- b. $P_A + P_B$
- c. P_A / P_B
- d. $P_A / (1 - P_L)$

38. The weight expression for the serial case based on the probability of A and B can be given by

- a. $P_A P_B$
- b. $P_A + P_B$
- c. P_A / P_B
- d. $P_A / (1 - P_L)$

39. The weight expression for the parallel case based on the probability of A and B can be given by

- a. $P_A P_B$
- b. $P_A + P_B$
- c. P_A / P_B
- d. $P_A / (1 - P_L)$

40. According to Huang's theorem, if T is a substring within $AB^n C$ then, T will appear in

- a. ABC
- b. $AB^2 C$
- c. AB
- d. ABCB

41. Which of the following forms a correct sequence of operations with regard to a tape reader which uses the notations - d-rewind, f-fast-forward, r-read, w-write, p-stop, k-skip?

- a. dfrr
- b. dfwr
- c. **rrdr**
- d. rrfd

42. Which of the following forms an anomalous sequence of operations with regard to a tape reader which uses the notations - d-rewind, f-fast-forward, r-read, w-write, p-stop, k-skip?

- a. **dfrr**
- b. dfwr
- c. rrdr
- d. rrfd

43. If $A = pp$, $B = srr$, $C = rp$, $T = ss$ then, according to Huang's theorem ss will appear in $pp(srr)^n rp$ if it appears in

- a. $pp(s)rp$
- b. $pp(srr)rp$
- c. $ppsp$
- d. **$pp(srr)^2 rp$**

44. If $A = pp$, $B = srr$, $C = rp$, $T = ss$ then, according to Huang's theorem ss will appear in _____ if it appears in $pp(srr)^2rp$.
- $pp(srr)rp$
 - $pp(sr)rp$
 - $pp(srr)^n rp$**
 - $ppsrrp$
45. Which of the following is a theorem that is proposed on regular expressions?
- Mendel's theorem
 - Huang's theorem**
 - Merkel's theorem
 - Henry's theorem
46. A tape reader uses the following notations, d-rewind, f-fast-forward, r-read, w-write, p-stop, k-skip. Which of the following sequences is anomalous?
- rr
 - fr
 - rp
 - df**
47. A tape reader uses the following notations, d-rewind, f-fast-forward, r-read, w-write, p-stop, k-skip. Which of the following sequences is not anomalous?
- df
 - dr
 - dw
 - rr**
48. A file can be opened (o), closed (c), or written (w). Which of the following is an anomalous sequence?
- cr**
 - wr
 - oo
 - cc
49. A file can be opened (o), closed (c), or written (w). Which of the following is not an anomalous sequence?
- cr
 - cw
 - oo**
 - or
50. The use of a decision-table model to design tests is warranted when
- decision table is filled with immaterial cases
 - specification is given as a decision table**
 - decision table is large to handle
 - rules are unpredictable
51. The use of a decision-table model to design tests is warranted when
- decision table is filled with immaterial cases
 - once a rule is satisfied and an action selected, no other rule need to be examined**
 - decision table is large to handle
 - rules are unpredictable
52. Which of the following kinds of bugs can be considered as of first-in-last-out type?
- design bugs
 - analysis bugs
 - requirements & specification bugs**
 - coding bugs
53. What are the four components of a decision table?
- condition stub, condition entry, action stub, action entry**
 - condition marker, event counter, action stub, action entry
 - condition stub, condition entry, action stub, event counter
 - condition stub, condition entry, event counter, action entry
54. Which of the following checks the source decision table for consistency and completeness and fills in any required default rules?
- decision table engine
 - inference engine
 - decision table's translator**
 - interpreter
55. KV chart is an abbreviation for
- Karnaugh-Veitch chart**
 - Karnaugh-Verilog chart
 - Kenalog-Verilog chart
 - Kenalog-Veitch chart

56. Boolean algebra is also known as

- a. arithmetic calculus
- b. **sentential calculus**
- c. differential calculus
- d. trigonometry

57. Knowledge-based system is also known as

- a. speech-recognition system
- b. management information system
- c. **expert system**
- d. executive information system

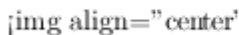
58. A compiler that starts with a specification in a high-order language and automatically produce integrated circuit layouts is called a

- a. platinum compiler
- b. silver compiler
- c. selenium compiler
- d. **silicon compiler**

59. The processing of knowledge in an expert system is done by a program called

- a. manipulator
- b. calculator
- c. **inference engine**
- d. neumann machine

60. Which of the following is a correct expansion for the following decision table?

	Rule 1	Rule 2
Condition 1	Yes	Yes
Condition 2	Yes	No
Condition 3		
Condition 4	Yes	

a.

	Rule 1	Rule 2
Condition 1	YY	YYYY
Condition 2	YY	NNNN
Condition 3	YN	NNYY
Condition 4	YY	YNNY

b.

	Rule 1	Rule 2
Condition 1	YY	YYYY
Condition 2	YY	YYYY
Condition 3	YN	YYYY
Condition 4	YY	YYYY

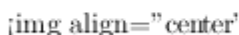
c.

	Rule 1	Rule 2
Condition 1	YY	NNNN
Condition 2	YY	NNNN
Condition 3	YY	NNNN
Condition 4	YY	NNNN

d.

	Rule 1	Rule 2
Condition 1	YN	YYYY
Condition 2	YN	NNNN
Condition 3	YN	NNYY
Condition 4	YN	YNNY

61. Which of the following is an correct expansion for the immaterial cases in the table given below?

	Rule 1	Rule 2
Condition 1	Yes	Yes
Condition 2	Yes	No
Condition 3		No
Condition 4	Yes	

	Rule 1	Rule 2
Condition 1	YY	YYYY
Condition 2	YY	NNNN
Condition 3	YN	NNYY
Condition 4	YY	YNNY

a.

	Rule 1	Rule 2
Condition 1	YY	YYYY
Condition 2	YY	YYYY
Condition 3	YN	YYYY
Condition 4	YY	YYYY

b.

	Rule 1	Rule 2
Condition 1	YY	NNNN
Condition 2	YY	NNNN
Condition 3	YY	NNNN
Condition 4	YY	NNNN

c.

	Rule 1.1	Rule 1.2	Rule 2.1	Rule 2.2
Condition 1	Yes	Yes	Yes	Yes
Condition 2	Yes	Yes	No	No
Condition 3	Yes	No	No	No
Condition 4	Yes	Yes	Yes	No

d.

62. For test case design by decision tables, if there are k rules over n binary predicates, there are at least _____ cases to consider and at most _____ cases.

- a. k, 2^n
- b. k+1, 2^n
- c. k, 2^{n+1}
- d. k+1, 2^{n+1}

63. For N predicates, there will _____ interchanges for each combination of predicate truth values.

- a. $2/N(N-1)$
- b. $N(N-1)/2$
- c. $2/N(N+1)$
- d. $N(N+1)/2$

64. In a decision table, an immaterial n-way case statement expands into

- a. n+1 subrules
- b. 1 subrule
- c. n+1 subrules
- d. n subrules

65. A rule that specifies the default action to be taken when all other rules fail in a decision table is called

- a. action stub
- b. default rule
- c. condition stub
- d. definite rule

66. The case of a "NO" in a decision table is called

- a. action case
- b. conditional case
- c. immaterial case
- d. material case

67. The algebra that is embedded in the implementation of decision-table processors is

- a. coefficient algebra
- b. vector algebra
- c. polynomial algebra
- d. Boolean algebra

68. A list of names of conditions in a decision table is called

- a. condition entry
- b. action stub
- c. action entry
- d. condition stub

69. The list of names the actions the routine will take or initiate if the rule is satisfied is called

- a. condition entry

- b. **action stub**
 c. action entry
 d. condition stub
70. $A'B'C' + AB'C + ABC' + ABC + A'B'C'$ can be reduced to
- a. $A + B$
 b. $A + BC$
 c. $A + B'C$
 d. **$A + B'C'$**
71. $A'B'C' + AB'C + ABC' + ABC + A'B'C' + B'$ can be reduced to
- a. 0
 b. 1
 c. **$A + B'$**
 d. $A + B$
72. $A + A' = ?$, $A + 1 = ?$
- a. **1, 1**
 b. 0, 1
 c. 1, 0
 d. 0, 0
73. $A + \overline{A}B = ?$ (using absorption law)
- a. $A + B$
 b. **$A + B'$**
 c. $A + AB$
 d. A
74. $(A + B) = A'B'$ This law is called
- a. distributive law
 b. law of complementation
 c. associative law
 d. **De Morgan's law**
75. Which of the following is an inclusive OR?
- a. **A or B or both**
 b. A or B
 c. A and B
 d. A and B and both
76. Which of the following is an exclusive OR?
- a. A and B
 b. **A or B, but not both**
 c. A or B or both
 d. A or B
77. Negation is also called as
- a. division
 b. subtraction
 c. **complementation**
 d. addition
78. Individual letters in a Boolean algebra expression are called
- a. **literals**
 b. letters
 c. labels
 d. syllables
79. Each product term in a simplified version of the sum of products form in Boolean algebra is called
- a. row implicant
 b. major implicant
 c. requisite implicant
 d. **prime implicant**
80. What is expression that the following KV chart denotes?
- | | | | |
|--|---|---|---|
| | 1 | 1 | 1 |
| | | | 1 |
- a. $BC' + AB$
 b. $AB' + BC$
 c. **$BC' + AB'$**
 d. $AB + BC$

81. What is expression that the following KV chart denotes?

1	1		
1	1		
		1	1
		1	1

- a. $AC' + A'C$
- b. AC
- c. $A'C' + AC$
- d. 1

82. What does the following KV chart depict?

1	
	1

- a. XOR
- b. NAND
- c. NOR
- d. **XNOR**

83. What does the following KV chart depict?

	1
1	

- a. **XOR**
- b. NAND
- c. NOR
- d. XNOR

84. What does the following KV chart depict?

1	

- a. XOR
- b. **NAND**
- c. NOR
- d. XNOR

85. Which of the following operations does $(AB)'$ denote?

- a. AND
- b. **NAND**
- c. NOR
- d. OR

86. Which of the following operations does $AB' + A'B$

- a. AND
- b. NOR
- c. **Exclusive-OR**
- d. NAND

87. Which of the following expressions denotes a NOR gate?

- a. **$A + B$**
- b. $A.B$
- c. $(A.B)'$
- d. $(A + B)'$

88. Which of the following denotes X-OR?

- a. **$AB' + A'B$**
- b. $A'B' + AB$
- c. $AB + AB'$
- d. $A'B + AB$

89. Which of the following denotes X-NOR?

- a. $AB' + A'B$
- b. **$A'B' + AB$**
- c. $AB + AB'$
- d. $A'B + AB$

90. The first step in the procedure for specification validation is to

- a. identify the default action
- b. enter the default cases
- c. **rewrite the specification**
- d. translate the default cases

91. The final step in the procedure for specification validation is to

- a. identify the default action

- b. enter the default cases
 - c. rewrite the specification
 - d. **translate the default cases**
92. Which of the following comes under the case of impossible things?
- a. solving a complex problem
 - b. **solving a provably unsolvable problem**
 - c. proving a theorem
 - d. solving a problem
93. Which of the following is an impossible to do case?
- a. solving a problem
 - b. proving a theorem
 - c. **creating a universal program verifier**
 - d. solving a complex problem
94. The specifications are casted into sentences of the form
- a. **IF predicate THEN action**
 - b. FOR I = 1 to N predicate
 - c. while Predicate = TRUE { ACTION}
 - d. IF action THEN predicate
95. The phrase "regardless" comes under the case of _____ while writing specifications into sentential form.
- a. **IMMATERIAL**
 - b. THEN
 - c. IF
 - d. EXCLUSIVE OR
96. The phrase "independent of " comes under the case of _____ while writing specifications into sentential form.
- a. **IMMATERIAL**
 - b. THEN
 - c. IF
 - d. EXCLUSIVE OR
97. The phrase "based upon" comes under the case of _____ while writing specifications into sentential form.
- a. **IMMATERIAL**
 - b. THEN
 - c. IF
 - d. EXCLUSIVE OR
98. The phrase "both" comes under the case of _____ while writing specifications into sentential form.
- a. IMMATERIAL
 - b. THEN
 - c. **AND**
 - d. EXCLUSIVE OR
99. The phrase "alternatively" comes under the case of _____ while writing specifications into sentential form.
- a. IMMATERIAL
 - b. THEN
 - c. AND
 - d. **OR**
100. Which among the following is not a convention used by a state-transition table?
- a. each column of the table corresponds to an input condition
 - b. the box at the intersection of a row and column specifies the next state
 - c. each row of the table corresponds to a state
 - d. **each entry is to be marked with a special symbol**
101. Which one of the following is a convention used by a state-transition table?
- a. each column of the table corresponds to a state
 - b. the box at the intersection of a row and column specifies the current state
 - c. **each row of the table corresponds to a state**
 - d. each entry is to be marked with a special symbol
102. The state-transition tables that are basically used for tape control hardware are
- a. input_code_table, output_table, transition_table
 - b. **input_code_table, output_table, transition_table, device_table**
 - c. input_code_table, transition_table, device_table
 - d. output_table, transition_table, device_table
103. A finite-state machine is a
- a. structural testing tool
 - b. sequential testing tool
 - c. **functional testing tool**

- d. syntax testing tool
104. **An abstract device that can be represented by a state graph having a finite number of states and a finite number of transitions between states**
- infinite-state machine
 - state-transition machine
 - absolute-state machine
 - finite-state machine**
105. **A combination of circumstances or attributes belonging for the time being to a person or thing is called**
- order
 - function
 - state**
 - method
106. **As a result of inputs, the state of a device changes, or it is said to have made a**
- transition**
 - transaction
 - translation
 - travel
107. **A state graph represented in the form of a table is called**
- state-path table
 - state-coverage table
 - state-clutter table
 - state-transition table**
108. **The characters that fed into a finite-state machine as input are called**
- input sum
 - input variable
 - input alphabet**
 - input tape
109. **The characters that are resultant out of a state transition in a finite-state machine are called**
- output sum
 - output variables
 - output alphabet**
 - output tape
110. **For finding the number of states in a state graph, the first step taken is**
- identify all the allowable values for each factor
 - number of states is the product of the number of allowable values of all the factors
 - identify all the component factors of the state**
 - identify the domain of the states
111. **In a dead state case, the initialization states are _____ to the working states, and the working states are _____ to the initialization states.**
- reachable, impossible
 - dead, unreachable
 - impossible, unreachable
 - unreachable, dead**
112. **Unreachable states can come about from previously _____ states.**
- buggy states
 - impossible states**
 - reachable states
 - dead states
113. **The behavior of a finite-state machine is _____ under all encodings.**
- oscillating
 - variant
 - invariant**
 - variable
114. **If there are two sets of rows, which except for the state names, have identical state graphs with respect to transitions and outputs, then the two sets can be considered as**
- merged equivalent**
 - dead
 - reachable
 - impossible
115. **If every sequence of inputs starting from one state produces exactly the same sequence of outputs when started from another state, then the states are said to be**
- partially equal
 - unequal
 - equivalent**
 - equal

116. A state that no input sequence can reach is called a/an
- unreachable state
 - dead state
 - inclusive state
 - exclusive state
117. A state that once entered cannot be left is called a/an
- unreachable state
 - dead state
 - inclusive state
 - exclusive state
118. One of the most common source of ambiguities and contradictions is
- specifications
 - documents
 - notes
 - transactions
119. Exactly how many transitions must be specified for every combination of input and state in a state-transition diagram?
- 2
 - 0
 - 1
 - n
120. In state testing, after defining a set of covering input sequences that get back to the initial state when starting from the initial state, the next step is to
- define the current state, the expected transition, and the expected output code.
 - define the expected next state, the unexpected transition, and the expected output code.
 - define the current state, the expected transition, and the unexpected output code.
 - define the current state, the unexpected transition, and the unexpected output code.
121. In executing state tests, it is essential to provide the means such as _____ to record the sequence of states resulting from the input sequence
- instrumentation software
 - sensitizing software
 - testing software
 - development software
122. The two aspects of a state graph are
- outputs causing transitions, outputs associated with transitions
 - states with transitions and inputs causing them, the outputs associated with transitions
 - states resulting from inputs and outputs
 - states with transitions without any inputs, outputs associated with such transitions
123. Ambiguities or contradictions that arise out of state transitions are called
- transaction-flow bugs
 - syntax bugs
 - transition bugs
 - domain bugs
124. Dead states in menu-driven software packages may lead to
- system reboot
 - normal operation
 - increased speed
 - performance appraisal
125. Which among the following could be the states of moving automobile whose engine is running?
- speed, shape, design
 - amount of fuel, tank capacity
 - reverse gear, neutral gear, first gear
 - car, engine no., tank size
126. State testing strategies are based on the use of _____ for software structure.
- independent machines
 - infinite-state machine models
 - inter-dependent machines
 - finite-state machine models
127. One of the simplest finite-state machine is a _____ in a compiler's lexical analyzer.
- Neumann machine
 - capacity detector
 - output detector
 - character sequence detector
128. The word "output" as used in the context of finite-state machines means a _____ from the output alphabet.

- a. **character**
 - b. string
 - c. phrase
 - d. word
129. The hypothetical concatenation used to combine the state and input codes is called
- a. transition-symbol product
 - b. state symbol
 - c. **state-symbol product**
 - d. state-symbol sum
130. Which of the following forms a correct set of states with respect to a person's check book?
- a. copy document, delete document, format disc
 - b. **equal, less than, greater than**
 - c. add software, remove software
 - d. play music, create folders
131. A program that detects the character sequence "ZCZ" can be in the following states
- a. no part of ZCZ detected, ZCZZ detected, ZC detected, ZCZ detected
 - b. no part of ZCZ detected, Z detected, ZCCCC detected, ZCZ detected
 - c. **no part of ZCZ detected, Z detected, ZC detected, ZCZ detected**
 - d. no part of ZCZ detected, ZCZZZ detected, ZC detected, ZCZ detected
132. Which of the following forms a correct set of states with respect to file manipulation?
- a. **copy document, delete document, format disc**
 - b. remove hard disk, mount the device
 - c. add software, remove software
 - d. play music, create folders
133. The times versus sequence of a state graph can be representation using
- a. control flowgraphs
 - b. bar graphs
 - c. **Petri-nets**
 - d. pie chart
134. BEGIN
PRESENT _STATE:=DEVICE _TABLE(DEVICE _NAME)
ACCEPT INPUT _VALUE
END
This is an example for which programming language statements?
- a. C
 - b. Java
 - c. Pascal
 - d. **PDL**
135. Program flags and switches are nothing but
- a. structures
 - b. functions
 - c. devices
 - d. **predicates**
136. The simplest essential finite-state machine is a
- a. **flip-flop**
 - b. logical gate
 - c. function
 - d. structure
137. A flip-flop is the simplest essential finite-state machine that cannot be implement without some kind of
- a. overhead
 - b. data
 - c. **feedback**
 - d. playback
138. The control logic of a combinational program can be described by a
- a. bar graph
 - b. **decision table**
 - c. control flowgraph
 - d. transaction flowgraph
139. A combinational machine selects paths based on the values of
- a. functions
 - b. logic gates
 - c. **predicates**
 - d. flip-flops

140. The input sequence "abbbb" produces the output sequence "uxuyy" put quotes and the input sequence "bbbbb" produces the output sequence "uxuyx", then the two set of states are said to be
- unequal
 - equal
 - not equivalent**
 - equivalent
141. Which of the following is not the correct set of state transition bugs?
- wrong number of states
 - wrong transitions
 - dead states
 - reachable states**
142. The three sets of sequences consisted by a set of tests for state testing are
- middle-level sequences, corresponding transitions, output sequences
 - corresponding transitions, input sequences, middle-level sequences
 - input sequences, corresponding transitions, output sequences**
 - middle-level sequences, output sequences, input sequences
143. The input sequence "abbbb" produces the output sequence "uxuyy" put quotes like this and the input sequence "bbbbb" produces the output sequence "uxuyx", then the two set of states are said to be
- unequal
 - equal
 - not equivalent
 - equivalent**
144. Which of the following is the correct set of state transition bugs?
- correct number of states, correct transitions, dead states, unreachable states
 - wrong number of states, wrong transitions, dead states, reachable states
 - wrong number of states, wrong transitions, dead states, unreachable states**
 - correct number of states, wrong transitions, dead states, reachable states
145. Which of the following is not a bug resulting from state testing?
- wrong transitions
 - wrong number of inputs**
 - wrong output for a given transition
 - wrong number of states
146. Which of the following is not a bug resulting from verification of a state graph?
- wrong transitions
 - wrong number of inputs**
 - wrong output for a given transition
 - wrong number of states
147. Which of the following testing methodology enables us to find out the bug "wrong output for a given transition"?
- transaction-flow testing
 - domain testing
 - state testing**
 - syntax testing
148. Which of the following testing methodology enables us to find out the bug "wrong transition for a given state-input combination"?
- transaction-flow testing
 - domain testing
 - state testing**
 - syntax testing
149. The starting point of state testing is
- to define a set of coverage paths
 - to define a set of transitions
 - to define a set of outputs
 - to define a set of covering inputs sequences**
150. The graph matrix for a graph with the following criteria can be given as
 Node A connected to Node A by link a
 Node A connected to Node C by link d
 Node B connected to Node A by link b
 Node B connected to Node A by link e
 Node C connected to Node B by link c

	A	B	C
A		a	
B		b	c
C			d

a.

	A	B	C
A		a	
B		b	
C		c	D

b.

	A	B	C
A	a		d
B	B+e		
C		c	

c.

	A	B	C
A		a	
B	b+e	b	C
C	d		

d.

151. The graph matrix for a graph with the following criteria can be given as Node A connected to Node A by link a
Node A connected to Node B by link b
Node A connected to Node B by link c
Node B connected to Node C by link d
Node B connected to Node C by link e
Node C connected to Node C by link f

	A	B	C
A		a	
B		b	c
C	c+f		d

a.

	A	B	C
A		a	
B	f	b	
C		c	d

b.

	A	B	C
A	a	b+c	
B			d+e
C			f

c.

	A	B	C
A		A	
B	b+e	B	c
C	d		

d.

152. The graph matrix for a graph with the following criteria can be given as
Node A connected to Node B by link a
Node B connected to Node B by link b
Node B connected to Node C by link c
Node C connected to Node C by link d

	A	B	C
A		a	
B		b	c
C			d

a.

	A	B	C
A		a	
B		b	
C		c	d

b.

	A	B	C
A			
B		b	c
C			d

c.

	A	B	C
A		a	
B		b	c
C	d		

d.

153. The graph matrix for the following criteria for a graph is

Node A connected to Node A by link a

Node B connected to none

Node C connected to none

	A	B	C
A		a	
B		b	c
C			d

a.

	A	B	C
A	a		
B		b	
C			c

b.

	A	B	C
A			
B			
C			a

c.

	A	B	C
A	a		
B			
C			

d.

154. Which of the following is the graph matrix for the given criteria?

Node A connected to Node A by link a

Node A connected to Node B by link b

Node A connected to Node C by link c

Node B connected to Node A by link d

Node B connected to Node B by link e

Node B connected to Node C by link f

Node C connected to Node A by link g

Node C connected to Node B by link h

Node C connected to Node C by link i

	A	B	C
A	a	b	c
B	d	e	f
C	g	h	i

a.

	A	B	C
A	a	g	f
B	h	b	e
C	i	d	c

b.

	A	B	C
A	i	d	c
B	h	e	b
C	g	f	A

c.

	A	B	C
A	a	h	G
B	b	i	f
C	c	d	e

d.

155. An alternative to path tracing is

- a. pie chart
- b. graph matrix
- c. bar graph
- d. Petri-net

156. Which of the following is used to get the path expression from every node to every other node?
- matrix addition
 - matrix transpose
 - matrix determinant
 - matrix multiplication**
157. Which of the following is used for converting graphs with loops into loop-free graphs of equivalence classes?
- partitioning algorithm**
 - addition algorithm
 - merging algorithm
 - insertion algorithm
158. A square array with one row and one column for every node in the graph is called a
- 3D array
 - graph matrix**
 - diagonal matrix
 - graphical array
159. In a graph matrix, the size of the matrix (i.e. number of rows and columns) is
- equal to the number of nodes**
 - greater than the number of nodes
 - less than the number of nodes
 - not equal to the number of nodes
160. A reflexive relation at every node is equivalent to which of the following?
- loop operator
 - conditional statement
 - self loop**
 - iterative statement
161. An equivalence relation satisfies which of the following properties
- reflexive, transitive, antisymmetric
 - reflexive, antisymmetric, asymmetric
 - reflexive, transitive, symmetric**
 - reflexive, antisymmetric, asymmetric
162. Which of the following properties is satisfied if a relation is a partial ordering relation?
- reflexive, transitive, asymmetric
 - asymmetric, symmetric, transitive
 - reflexive, transitive, symmetric
 - transitive, reflexive, antisymmetric**
163. A relation R is _____ if aRb and bRa , then $a = b$.
- symmetric
 - asymmetric
 - antisymmetric**
 - transitive
164. If a set of objects satisfies an equivalence relation, we say that they form a/an _____ over that relation.
- equivalence class**
 - equivalence group
 - equivalence set
 - equivalence association
165. A connection matrix is also called
- connection graph
 - adjacency matrix**
 - symmetric matrix
 - latency matrix
166. A graph consists of a set of abstract objects called _____ and a _____ between the nodes.
- relation, nodes
 - nodes, relation**
 - nodes, function
 - points, relation
167. A relation R is transitive if
- aRa
 - if aRb then bRa
 - $a = b$
 - if (aRb and bRc) then aRc**
168. A relation R is reflexive if
- aRa**

- b. if aRb then bRa
 c. $a = b$
 d. if $(aRb \text{ and } bRc)$ then aRc
169. **A relation R is symmetric if**
- a. aRa
b. if aRb then bRa
 c. $a = b$
 d. if $(aRb \text{ and } bRc)$ then aRc
170. **Which of the following is an antisymmetric relation?**
- a. not equals
 b. is greater than
c. is greater than or equal to
 d. is under
171. **Which of the following is a non-antisymmetric relation?**
- a. not equals
b. is greater than
 c. is greater than or equal to
 d. is under
172. **For a partial ordered relation, a _____ 'a', is one for which the relation xRa does not hold for any other element x.**
- a. minimum element
b. maximum element
 c. middle element
 d. least element
173. **For a partial ordered relation, a _____ 'a', is one for which the relation aRx does not hold for any other element x.**
- a. minimum element
 b. maximum element
 c. middle element
 d. least element
174. **Which of the following are the properties of a partial ordered relation?**
- a. **loop-free, maximum element, minimum element**
 b. loop-free, middle element, average element
 c. loop-free, maximum element, average element
 d. loop-free, minimum element, average element
175. **The diagonal of a matrix that slants down to the right is called**
- a. leading diagonal
 b. major diagonal
c. principal diagonal
 d. minor diagonal
176. **A matrix for which $A^2 = A$ is said to be**
- a. identical
 b. inverse
 c. reflexive
d. idempotent
177. **The n th power of a matrix $A + I$ over a transitive relation is called the ___ of the matrix.**
- a. **transitive closure**
 b. transitive idempotent
 c. transitive measure
 d. transitive partition
178. **A matrix whose successive powers eventually yield an idempotent matrix is called a/an**
- a. **idempotent generator**
 b. idempotent matrix
 c. idempotent operator
 d. idempotent destructor
179. **Which of the following is true with regard to idempotent property?**
- a. $a^2 = a^4$
b. $a^{k+1} = a^k$
 c. $a^3 = a^5$
 d. $a^{k+1} = a^{k+3}$
180. **Which of the following pairs of relations is completely irreflexive?**
- a. equals, is friend of
 b. is relative of, is friend of
c. is under, is on top of

- d. is friend of, equals
181. **Loop-free graphs are said to be**
- a. partially ordered
b. partly ordered
 c. fully ordered
 d. completely ordered
182. **A matrix obtained by interchanging the rows and columns of a given matrix is called _ _ _ of the matrix.**
- a. translation
 b. transition
 c. determinant
d. transpose
183. **A matrix $A \# B$ obtained by a element-by-element multiplication operation on the entries of matrices A and B is called**
- a. union
 b. multiplication
 c. division
d. intersection
184. **An element-by-element addition operation such as a Boolean OR on two matrices is called**
- a. **union**
 b. multiplication
 c. division
 d. intersection
185. **A graph whose relations are not symmetric is called a**
- a. undirected graph
 b. pointer graph
c. directed graph
 d. regular graph
186. **A graph whose relations are symmetric is called a**
- a. **undirected graph**
 b. pointer graph
 c. directed graph
 d. regular graph
187. **The idea behind partition testing strategies is to partition the input space into**
- a. feasible space
 b. feasible domains
c. equivalence classes
 d. input domains
188. **Which of the following are two different strategies of partition testing?**
- a. regression and syntax testing
b. domain and path testing
 c. syntax and transaction-flow testing
 d. domain and syntax testing
189. **Which of the following is not a transitive relation?**
- a. is greater than or equal to
 b. is less than or equal to
 c. is a relative of
d. is a friend of
190. **The following parallel links of a graph matrix can be reduced into which of the below options?**
Node 17, 21; x
, 44; y
, 44; z
, 44; w
- a. node 17, 21; x
b. node 17, 21; x
, 44; y (where $y = y+z+w$)
 c. node 17, 21; x, y, z, w
 d. node 17, 21; y
, 44: x (where $x = x+y+z$)
191. **In the node reduction algorithm for reduction of graph matrices, the size of the resultant matrix will be reduced to**
- a. 0
b. 1
 c. 2 X 2 matrix

- d. 3 x 3 matrix
192. Which of the following is the first step of node-reduction algorithm for the reduction of graph matrices?
- combine parallel terms
 - eliminate a node and replace it with equivalent links**
 - observe loops terms
 - continue until only two nodes exist
193. Which of the following is the last step of node-reduction algorithm for the reduction of graph matrices?
- combine parallel terms
 - eliminate a node and replace it with equivalent links
 - observe loops terms
 - continue until only two nodes exist**
194. The cross-term step for the graph matrices requires combining of every ____ to the node with every ____ from that node.
- normal node, average node
 - external node, internal node
 - inlink, outlink**
 - internal node, external node
195. The number of outlinks a node has is called
- in-degree
 - degree
 - out-degree**
 - inter-degree
196. The number of inlinks a node has is called
- in-degree**
 - degree
 - out-degree
 - inter-degree
197. The number of links a node has is called
- in-degree
 - degree**
 - out-degree
 - inter-degree
198. The number of links a node has is equal to
- (in-degree)-(out-degree)
 - in-degree+out-degree**
 - in-degree*out-degree
 - in-degree/out-degree
199. The optimization order for node reduction of graph matrices is to do _____ nodes first.
- average-degree
 - mean-degree
 - lowest-degree**
 - highest-degree