001. Which of the following is/are property/properties of a dynamic programming problem? **B**

A Non-Optimal substructure
B Overlapping sub problems and Optimal substructure
C Greedy approach
D Divide and conquer

002. If an optimal solution can be created for a problem by constructing optimal solutions for its subproblems, the problem possesses ____________ property. **B**

A Overlapping subproblems
B Optimal substructure
C Memorization
D Greedy

003. If a problem can be broken into subproblems which are reused several times, the problem possesses ____________ property. **A**

A Overlapping subproblems
B Optimal substructure
C Memorization
D Greedy

004. If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called _____________ **C**

A Dynamic Programming
B Greedy
C Divide and Conquer
D Recursion

005. You are given a knapsack that can carry a maximum weight of 60. There are 4 items with weights {20, 30, 40, 70} and values {70, 80, 90, 200}. What is the maximum value of the items you can carry using the knapsack? **A**

A 160
B 200
C 170
D 90

006. What is the time complexity of the brute force algorithm used to solve the Knapsack problem? **C**

A O(n)
B O(n!)
C $O(2^n)$
D $O(n^3)$

007. Dynamic programming is used for **A**

A All Optimal solution is generated
B One solution is generated
C No optimal solution generated
D Partial solution generated

008. The Knapsack problem is an example of ____________ **B**

A Greedy algorithm
B 2D dynamic programming
C 1D dynamic programming
D Divide and conquer

009. The following sequence is a fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21,.. Which technique can be used to get the nth fibonacci term? **D**

A Recursion
B Dynamic programming
C A single for loop
D Recursion, Dynamic Programming, For loops

010. Suppose we find the 8th term using the recursive implementation. The arguments passed to the function calls will be as follows: fibonacci(8) fibonacci(7) + fibonacci(6) fibonacci(6) + fibonacci(5) + fibonacci(5) + fibonacci(4) fibonacci(5) + fibonacci(4) + fibonacci(4) + fibonacci(3) + fibonacci(4)+ fibonacci(3) + fibonacci(3) + fibonacci(2) :Which property is shown by the above function calls? **C**

A Memorization
B Optimal substructure
C Overlapping sub-problems
D Greedy

011. Which of the following algorithm design technique is used in finding all pairs of shortest distances in a graph? **A**

A Dynamic Programming
B Greedy
C Divide and Conquer
D Recursion

012. The dynamic programming implementation of the maximum sum rectangle problem uses which of the following algorithm? **C**

A hirschbergs algorithm
B needleman-wunsch algorithm
C kadanes algorithm
D wagnerfischer algorithm

013. Which of the following problems is NOT solved using dynamic programming? **D**

A 0/1 knapsack problem
B Matrix chain multiplication problem
C Edit distance problem
D Fractional knapsack problem

014. Which of the following problems should be solved using dynamic programming? **C**

A Merge sort
B Binary Search
C Longest Common subsequence
D Quick sort

015. In dynamic programming, the technique of storing the previously calculated values is called ___________ **C**

A Saving value property
B Storing value property
C Memorization
D Mapping

016. When a top-down approach of dynamic programming is applied to a problem, it usually _____________ **B**

A Decreases both, the time complexity and the space complexity
B Decreases the time complexity and increases the space complexity
C Increases the time complexity and decreases the space complexity
D Increases both, the time complexity and the space complexity

017. What approach is being followed in Floyd Warshall Algorithm? **A**

A Dynamic Programming
B Greedy Algorithms
C Linear Programming
D Branch and Bound

018. Floyd Warshall Algorithm can be used for finding ___________ **D**

A Single source shortest path
B Topological Sort
C Minimum spanning tree
D Transitive closure

019. What procedure is being followed in Floyd Warshall Algorithm? **B**

A Top down
B Bottom up
C Big bang
D Random

020. If a problem can be broken into subproblems which are reused several times, the problem possesses ____________ **A**

A Overlapping subproblems
B Optimal substructures
C Memorization
D Greedy

021. Time complexity of fractional knapsack problem is **A**

A o(n log n)
B o(n)
C o(n2)
D o(nw)

022. Bellmann Ford Algorithm is an example for __________ **A**

A Dynamic Programming
B Greedy Algorithms
C Linear Programming
D Branch and Bound

023. Given an array, check if the array can be divided into two subsets such that the sum of elements of the two subsets is equal. This is the balanced partition problem. Which of the following methods can be used to solve the balanced partition problem? **D**

A dynamic programming
B recursion
C brute force
D dynamic programming, recursion, brute force

024. What is the objective of the knapsack problem? **A**

A to get maximum total value in the knapsack
B to get minimum total value in the knapsack
C to get maximum weight in the knapsack
D to get minimum weight in the knapsack

025. You are given infinite coins of denominations 1, 3, 4. What is the minimum number of coins required to achieve a sum of 7? **B**

A 1
B 2
C 3
D 4

026. You are given infinite coins of denominations 5, 7, 9. Which of the following sum CANNOT be achieved using these coins? **C**

A 50
B 21
C 13
D 23

027. Given a one-dimensional array of integers, you have to find a sub-array with maximum sum. This is the maximum sub-array sum problem. Which of these methods can be used to solve the problem? **D**

A Dynamic programming
B Two for loops (naive method)
C Divide and conquer
D Dynamic programming, nave method andDivide and conquer methods

028. What is the time complexity of the following dynamic programming algorithm used to find the maximum sub-array sum? **A**

A O(n)
B O(logn)
C O(nlogn)
D O(n^2)

029. You are given infinite coins of denominations v1, v2, v3,..,vn and a sum S. The coin change problem is to find the minimum number of coins required to get the sum S. This problem can be solved using **B**

A Greedy algorithm
B Dynamic programming
C Divide and conquer
D Backtracking

030. You are given infinite coins of denominations 1, 3, 4. What is the total number of ways in which a sum of 7 can be achieved using these coins if the order of the coins is not important? **C**

A 4
B 3
C 5
D 6

031. If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called **A**

A Dynamic programming
B Greedy
C Divide and conquer
D Recursion

032. When a top-down approach of dynamic programming is applied to a problem, it usually ____________ **B**

A Decreases both, the time complexity and the space complexity
B Decreases the time complexity and increases the space complexity
C Increases the time complexity and decreases the space complexity
D Increases both, the time complexity and thespace complexity

033. The problem related to subset-sum is defined as follows. A set consisting of n positive integers, S = {a1 ,a2 ,a3 ,,an} and a positive integer W is given. Is there a subset of S , the sum of whose elements is W? A dynamic program for solving this problem uses a two-dimensional Boolean array Y, with n rows and W+1 columns. Y[i, j], 1 <= i<= n, 0 <= j <= W, will be true if there is a subset of {a1 ,a2 ,,ai} the sum of whose elements is j. Which of the following is valid for ai<= j<= W and 2 <= i<= n? **B**

A Y[i, j] = Y[i 1, j] Y[i, j ai]
B Y[i, j] = Y[i 1, j] Y[i 1, j ai]
C Y[i, j] = Y[i 1, j] Y[i -1, j ai]
D Y[i, j] = Y[i 1, j] Y[i, j ai]

034. Consider the both sequences given below: P = < B, C, D, C, A, B, C >, and Q = < C, A, D, B, C, B > What will be the longest common subsequence &#39s length of P and Q? **C**

A 2
B 3
C 4
D 5

035. What happens when a top-down approach to dynamic programming is applied to a problem? **B**

A It increases both the time and space complexity
B It decreases the time complexity and increases the space complexity
C It decreases the space complexity and increases the time complexity
D It decreases both the time and space complexity

036. Consider the product of three matrices L, M, and N having a rows and b columns, b rows and c columns, c rows and d columns. In which of the following conditions,It will take less time to calculate the product as (LM)N than to calculate L(MN)? **B**

A a>b
B (1/b + 1/d) < (1/a + 1/c)
C (a+b)>(c+d)
D It will take the same time in every condition

037. The longest increasing subsequence problem is a problem to find the length of a subsequence from a sequence of array elements such that the subsequence is sorted in increasing order and its length is maximum. This problem can be solved using **B**

____

A Recursion B Dynamic programming
C Bruteforce D Greedy

038. Which of the standard algorithms shown below is not based on Dynamic Programming? **A**

A Prim &#39s Minimum Spanning Tree B Bellman-Ford Algorithm for single-source shortest path
C Floyd Warshall Algorithm for all-pairs shortest paths D 0-1 Knapsack problem

039. For which of the following inputs would Kadanes algorithm produce a WRONG output? **B**

A {1,0,-1} B {-1,-2,-3}
C {1,2,3} D {0,0,0}

040. What is the time complexity of Kadanes algorithm? **B**

A O(1) B O(n)
C $O(n^2)$ D O(logn)

041. What is the complexity of Bellman- Ford single- source shortest path algorithm on a complete graph of n vertices? **C**

A (n^2) B $(n^2 \log n)$
C (n^3) D $(n^3 \log n)$

042. The relationship between stages of a dynamic programming problem is called a **D**

A State B Random variable
C Node D Graph

043. Identify the correct problem using multi stage graph from the below list. **A**

A Resource allocation problem B Traveling sales person problem
C Producer Consumer problem D Barbers problem

044. The optimal solution to a problem is a combination of optimal solutions to its subproblems. This is known as **B**

A Principle of duality B Principle of optimality
C Principle of feasibility D Principle of Dynamicity

045. Which of the following statements is TRUE? **A**

A The algorithm uses dynamic programming paradigm B The algorithm has a linear complexity and uses branch and bound paradigm
C The algorithm has a non-linear polynomial complexity and uses branch and bound paradigm D The algorithm uses divide and conquer paradigm.

046. Development of dynamic programming can be broken into a sequence of how many steps? **A**

A 3 B 4
C 5 D 6

047. What are the conditions for an optimal binary search tree and what is its advantage? **A**

A The tree should not be modified, and you should know how often the keys are B accessed, it improves the lookup cost
C You should know the frequency of access of the keys, improves lookup time D The tree can be modified and you should know the no of elements in the tree before

048. How many number of binary trees can be formed with 3 keys? **C**

A 7 B 9
C 6 D 8

049. What happens when the backtracking algorithm reaches a complete solution? **B**

A It backtracks to the root B It continues searching for other possible solutions

	C It traverses from a different route	D Recursively traverses through the same route		

050. A node is said to be ____________ if it has a possibility of reaching a complete solution. **B**

A Non-promising B Promising
C Succeeding D Preceding

051. In what manner is a state-space tree for a backtracking algorithm constructed? **A**

A Depth-first search B Breadth-first search
C Twice around the tree D Nearest neighbour first

052. In general, backtracking can be used to solve? **C**

A Numerical problems B Exhaustive search
C Combinatorial problems D Graph coloring problems

053. Which of the problems cannot be solved by backtracking method? **D**

A n-queen problem B subset sum problem
C hamiltonian circuit problem D travelling salesman problem

054. Backtracking algorithm is implemented by constructing a tree of choices called as? **A**

A State-space tree B State-chart tree
C Node tree D Backtracking tree

055. The running time of Floyd-Warshall algorithm is **C**

A (n) B (n^3)
C (n^2) D (n log n)

056. What is the time complexity of FloydWarshall algorithm to calculate all pair shortest path in a graph withnvertices? **D**

A O(n^2logn) B Theta(n^2logn)
C Theta(n^4) D Theta(n^3

057. The problem of finding a subset of positive integers whose sum is equal to a given positive integer is called as? **B**

A n- queen problem B subset sum problem
C knapsack problem D hamiltonian circuit problem

058. The problem of placing n queens in a chessboard such that no two queens attack each other is called as? **A**

A n-queen problem B eight queens puzzle
C four queens puzzle D 1-queen problem

059. For how many queens was the extended version of Eight Queen Puzzle applicable for n*n squares? **D**

A 5 B 6
C 8 D n

060. Who was the first person to find the solution of Eight Queen Puzzle using determinant? **C**

A Max Bezzel B Frank Nauck
C Gunther D Friedrich

061. Who coined the term backtracking? **A**

A Lehmer B Donald
C Ross D Ford

062. ___________ enumerates a list of promising nodes that could be computed to give the possible solutions of a given problem. **C**

A Exhaustive search B Brute force
C Backtracking D Divide and conquer

063. Which one of the following is an application of the backtracking algorithm? **D**

A Finding the shortest path B Finding the efficient quantity to shop
C Caroms D Crossword

064. The problem of finding a list of integers in a given specific range that meets certain conditions is called? **B**

A Subset sum problem B Constraint satisfaction problem
C Hamiltonian circuit problem D Travelling salesman problem

065. In how many directions do queens attack each other? **C**

A 1 | B 2
C 3 | D 4

066. Placing n-queens so that no two queens attack each other is called? **A**

A n-queens problem | B 8-queens problem
C Hamiltonian circuit problem | D subset sum problem

067. In n-queen problem, how many values of n does not provide an optimal solution? **B**

A 1 | B 2
C 3 | D 4

068. Of the following given options, which one of the following is a correct option that provides an optimal solution for 4-queens problem? **A**

A (3,1,4,2) | B (2,3,1,4)
C (4,3,2,1) | D (4,2,3,1)

069. How many fundamental solutions are the for 3 queens on a 3*3 board? **D**

A 1 | B 12
C 3 | D 0

070. Which ordered board is the highest enumerated board till now? **C**

A 25x25 | B 26x26
C 27x27 | D 28x28

071. How many solutions are there for 8 queens on 8*8 board? **C**

A 91 | B 89
C 92 | D 78

072. How many fundamental solutions are there for the eight queen puzzle? **D**

A 90 | B 92
C 10 | D 12

073. What is vertex coloring of a graph? **A**

A A condition where any two vertices having a common edge should not have same color | B A condition where any two vertices having a common edge should always have same color
C A condition where all vertices should have a different color | D A condition where all vertices should have same color

074. Minimum number of unique colors required for vertex coloring of a graph is called? **C**

A vertex matching | B chromatic index
C chromatic number | D color number

075. Often the problem to be solved calls for finding one vector that maximizes a ________ function. **B**

A Sigmoid | B Criterion
C Threshold | D max

076. In backtracking, the criterion functions are also called_____ **A**

A bounding functions | B basis functions
C decision functions | D target functions

077. Of the following given options, which one of the following does not provides an optimal solution for 8-queens problem? **B**

A (5,3,8,4,7,1,6,2) | B (1,6,3,8,3,2,4,7)
C (4,1,5,8,6,3,7,2) | D (6,2,7,1,4,8,5,3)

078. In general, backtracking can be used to solve? **C**

A Numerical problems | B Exhaustive search
C Combinatorial problems | D Graph coloring problems

079. How many possible solutions exist for an 8-queen problem? **C**

A 56 | B 77
C 92 | D 34

080. What is the domination number for 8-queens problem? **D**

A 8 | B 7
C 6 | D 5

081. Which of the following problems is known to have a polynomial time solution? **C**

A Longest simple path problem for a given graph
B The 3-colorability problem in graphs
C The Eulerian cycle in a graph
D The Hamiltonian Cycle in a graph

082. Backtracking, in the ___ case, may have to generate all possible candidates in a problem state that is growing exponentially. **B**

A Best
B Worst
C Average
D general

083. Which of the following is not a backtracking algorithm? **C**

A Knight tour problem
B N queen problem
C Towers of Hanoi
D M coloring problem

084. Which constraints depend on the particular instance of the problem being solved? **C**

A Implicit
B Generic
C Explicit
D bounding

085. The _____ constraints are rules that determine which of the tuples in the solution space that satisfy the criterion function. **A**

A Implicit
B Generic
C Explicit
D bounding

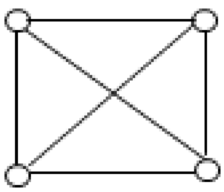
086. How many edges will a tree consisting of N nodes have? **C**

A n
B log(n)
C n-1
D n+1

087. What happens when the backtracking algorithm reaches a complete solution? **B**

A It backtracks to the root
B It continues searching for other possible solutions
C It traverses from a different route
D Recursively traverses through the same route

088. How many unique colors will be required for vertex coloring of the following graph? **C**

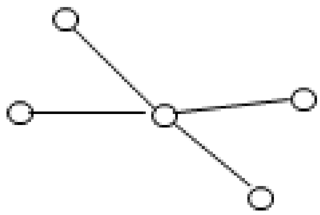


A 2
B 3
C 4
D 5

089. What is the condition for proper coloring of a graph? **A**

A two vertices having a common edge should not have same color
B two vertices having a common edge should always have same color
C all vertices should have a different color
D all vertices should have same color

090. **B**



What will be the chromatic number of the following graph?

A 1
B 2
C 3
D 4

091. The n-Queens problem, the ___ circuit and the Subset-Sum problem are some examples of problems that can be solved by Backtracking. **A**

A Hamiltonian
B Euclidean
C Short
D Chameleon

092. Which data structure is used to construct a state space tree in backtracking? **A**

A BFS | B DFS
C Bipartite graph | D Euler graph

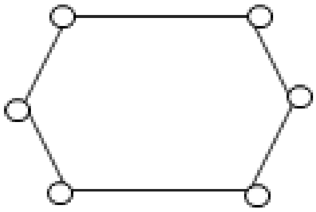
093. From the following which is not return optimal solution? **B**

A Dynamic programming | B Backtracking
C Branch and bound | D Greedy method

094. A___ is a round trip path along n edges of G that visits every vertex once and returns to its starting position. **D**

A TSP | B MST
C Multistage Graph | D Hamiltonian Cycle

095. **B**



What will be the chromatic number of the following graph?

A 1 | B 2
C 3 | D 4

096. The worst-case efficiency of solving a problem in polynomial time is? **B**

A O(p(n) | B O(p(n log n))
C O(p(n2)) | D O(p(m log n))

097. What will be the chromatic number for a line graph having n vertices? **D**

A 0 | B 1
C 2 | D n

098. The number of colors used by a proper coloring graph is called? **A**

A k coloring graph | B x coloring graph
C m coloring graph | D n coloring graph

099. What is a chromatic number? **C**

A The maximum number of colors required for proper edge coloring of graph | B The maximum number of colors required for proper vertex coloring of graph
C The minimum number of colors required for proper vertex coloring of graph | D The minimum number of colors required for proper edge coloring of graph

100. What will be the chromatic number for an empty graph having n vertices? **B**

A 2 | B 1
C 0 | D n

101. What will be the chromatic number for an bipartite graph having n vertices? **C**

A 0 | B 1
C 2 | D 3

102. Consider two decision problems Q1, Q2 such that Q1 reduces in polynomial time to 3-SAT and 3-SAT reduces in polynomial time to Q2. Then which one of the following is consistent with the above statement? **A**

A Q1 is in NP, Q2 is NP hard | B Q2 is in NP, Q1 is NP hard
C Both Q1 and Q2 are in NP | D Both Q1 and Q2 are in NP hard

103. Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statements is true? **B**

A R is NP-complete | B R is NP-hard
C Q is NP-complete | D Q is NP-hard

104. For problems X and Y, Y is NP-complete and X reduces to Y in polynomial time. Which of the following is TRUE? **D**

A If X can be solved in polynomial time, then so can Y | B X is NP-complete

C X is NP-hard | D X is in NP, but not necessarily NP-complete

105. Problems that can be solved in polynomial time are known as? **B**

A intractable | B tractable

C decision | D complete

106. A problem is said to be NP-Complete **A**

A If it is as hard as any problem in NP | B A non-polynomial time algorithm has been discovered

C A polynomial time algorithm can exist but needs a parallel computer | D There is Greedy solution to the problem

107. Which of the following problems is known to have a polynomial time solution? **C**

A Longest simple path problem for a given graph | B The 3-colorability problem in graphs

C The Eulerian cycle in a graph | D The Hamiltonian Cycle in a graph

108. Consider the following two problems on undirected graphs : Given G(V, E), does G have an independent set of size **|** V **|** - 4? : Given G(V, E), does G have an independent set of size 5? Which one of the following is TRUE? **C**

A is in P and is NP-complete | B is NP-complete and is in P

C Both and are NP-complete | D Both and are in P

109. Ram and Shyam have been asked to show that a certain problem is NP-complete. Ram shows a polynomial time reduction from the 3-SAT problem to , and Shyam shows a polynomial time reduction from to 3-SAT. Which of the following can be inferred from these reductions? **C**

A is NP-hard but not NP-complete | B is in NP but not NP-complete

C is NP-complete | D is neither NP-hard nor in NP

110. Problems that can be solved in polynomial time are known as? **B**

A intractable | B tractable

C decision | D complete

111. The problems 3-SAT and 2-SAT are **C**

A Both in P | B Both NP-complete

C NP-complete and in P respectively | D Undecidable and NP-complete respectively

112. Problems to which SAT or similar problems are reducible are called **C**

A P | B NP

C NP-complete | D NP-hard

113. Which class contains problems that are verifiable in polynomial time? **A**

A P | B NPC

C NP | D A

114. Let P_A be a problem that belongs to the class NP. Then which one of the following is TRUE? **C**

A There is no polynomial time algorithm for P_A | B If P_A can be solved deterministically in polynomial time, then P=NP

C If P_A is NP-hard, then it is NP-complete | D P_A may be undecidable

115. Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statements is true? **B**

A R is NP-complete | B R is NP-hard

C Q is NP-complete | D Q is NP-hard

116. How many steps are required to prove that a decision problem is NP complete? **B**

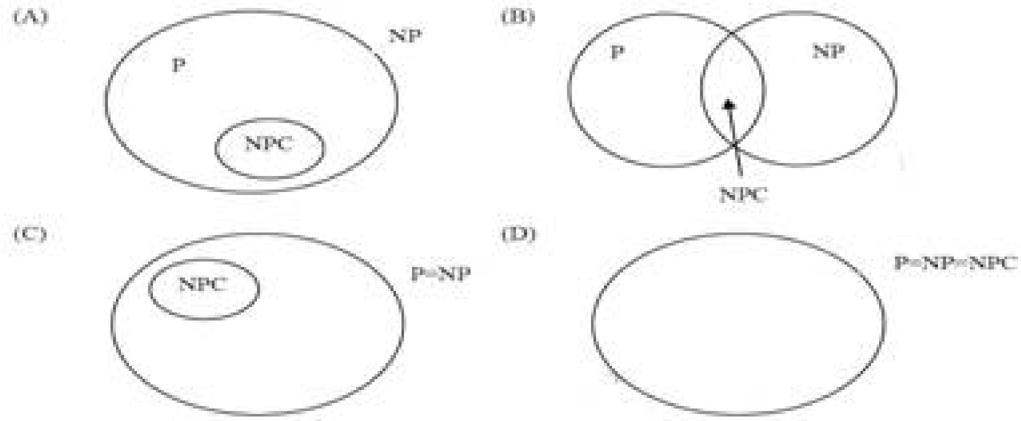
A 1 | B 2

C 3 | D 4

117. The choice of polynomial class has led to the development of an extensive theory called ..... **A**

	A	computational complexity	B	time complexity	
	C	problem complexity	D	decision complexity	
118.	To which of the following class does a CNF-satisfiability problem belong?				**C**
	A	NP class	B	P class	
	C	NP complete	D	NP hard	
119.	... is the class of decision problems that can be solved by non-deterministic polynomial algorithms?				**A**
	A	NP	B	P	
	C	Hard	D	Complete	
120.	Halting problem is an example for?				**B**
	A	Decidable problem	B	Undecidable problem	
	C	Complete problem	D	Trackable problem	
121.	How many stages of procedure does a non-deterministic algorithm consist of?				**B**
	A	1	B	2	
	C	3	D	4	
122.	How many conditions have to be met if an NP- complete problem is polynomially reducible?				**B**
	A	1	B	2	
	C	3	D	4	
123.	What is the worst case running time of Rabin Karp Algorithm?				**C**
	A	Theta(n)	B	Theta(n-m)	
	C	Theta((n-m+1)m)	D	Theta(nlogm)	
124.	What is a Rabin and Karp Algorithm?				**A**
	A	String Matching Algorithm	B	Shortest Path Algorithm	
	C	Minimum spanning tree Algorithm	D	Approximation Algorithm	
125.	Problem A is reducible to problem B if there is an algorithm that can				**A**
	A	transform any instance of B to an instance of A	B	transform any instance of A to an instance of B	
	C	solve A	D	solve A as fast as B	
126.	Which of the following algorithm can be used to solve the Hamiltonian path problem efficiently?				**A**
	A	Branch and bound	B	Iterative improvement	
	C	Divide and conquer	D	Greedy method	
127.	Hamiltonian path problem is				**D**
	A	NP problem	B	N class problem	
	C	P class problem	D	NP complete problem	
128.	Which of the following problems is similar to that of a Hamiltonian path problem?				**C**
	A	knapsack problem	B	closest pair problem	
	C	travelling salesman problem	D	assignment problem	
129.	Consider three decision problems P1, P2 and P3. It is known that P1 is decidable and P2 is undecidable. Which one of the following is TRUE?				**C**
	A	P3 is decidable if P1 is reducible to P3	B	P3 is undecidable if P3 is reducible to P2	
	C	P3 is undecidable if P2 is reducible to P3	D	P3 is decidable if P3 is reducible to P2s complement	
130.	Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statements is true?				**B**
	A	R is NP-complete	B	R is NP-hard	
	C	Q is NP-complete	D	Q is NP-hard	
131.	Let X be a problem that belongs to the class NP. Then which one of the following is TRUE?				**C**
	A	There is no polynomial time algorithm for X.	B	If X can be solved deterministically in polynomial time, then P = NP.	

	C If X is NP-hard, then it is NP-complete.	D X may be undecidable.	
132.	Which of the below does not belong to the closure properties of NP class?		**D**
	A Union	B Concatenation	
	C Reverse	D Complement	
133.	Which of the following is true ?		**A**
	A P is subset of NP	B NP is subset of P	
	C P and NP are equal	D NP is subset of NP hard	
134.	What happens when the modulo value(q) is taken large?		**C**
	A Complexity increases	B Spurious hits occur frequently	
	C Cost of extra checking is low	D Matching time increases	
135.	An expression is said to be in ______ if it is in the conjunctive normal form, and every clause has exact three literals.		**A**
	A 3-CNF	B 2-CNF	
	C 1-CNF	D 4-CNF	
136.	Which of the following arbitrarily chooses one of the elements of sets S?		**A**
	A Choice	B Failure	
	C Success	D exit	
137.	Flow shop scheduling problem is an example of____ type of problem.		**A**
	A NP-Hard	B NP-complete	
	C P	D Simple NP	
138.	If problem L1 is a decision problem and L2 is an optimization problem, then it is possible that		**D**
	A L1!=L2	B L1*L2	
	C L1/L2	D L1L2	
139.	Which of following generates a random string purported to solve the problem?		**B**
	A P class	B NP class	
	C NP-hard	D NP-complete	
140.	An algorithm A is of polynomial complexity p() such that the computing time of A is		**B**
	A O(n)	B O(p(n))	
	C O(logn)	D O(1)	
141.	For a non-deterministic algorithm, if the successful completion is not possible, then the complexity is__		**B**
	A O(logn)	B O(1)	
	C O(n!)	D O(n)	
142.	Which of the following function indicates an unsuccessful completion of non-deterministic problem?		**B**
	A Abort	B Failure	
	C Exit	D terminate	
143.	The _____ problem is to determine whether a Boolean formula is true for some assignment of truth values to the variables.		**B**
	A Polynomial	B Satisfiability	
	C Euler	D NP-Hard	
144.	Suppose a polynomial time algorithm is discovered that correctly computes the largest clique in a given graph. In this scenario, which one of the following represents the correct Venn diagram of the complexity classes P, NP and NP Complete (NPC)?		**D**



A A
B B
C C
D D

145. A problem in NP is NP-complete if **B**

A It can be reduced to the 3-SAT problem in polynomial time
B The 3-SAT problem can be reduced to it in polynomial time
C It can be reduced to any other problem in NP in polynomial time
D some problem in NP can be reduced to it in polynomial time

146. Which of the following statements are TRUE? 1.The problem of determining whether there exists a cycle in an undirected graph is in P. 2. The problem of determining whether there exists a cycle in an undirected graph is in NP. 3. If a problem A is NP-Complete, there exists a non-deterministic polynomial time algorithm to solve A. **A**

A 1, 2 and 3
B 1 and 2 only
C 2 and 3 only
D 1 and 3 only

147. In order to prove that an NP problem is NP-complete, all that is needed is to show that SAT can be converted into it in____ **C**

A Non-polynomial time
B Constant time
C Polynomial time
D Zero time

148. Cooks Theorem implies that any NP problem is at most polynomially harder than____ **C**

A Greedy
B Backtracking
C SAT
D NP

149. In a computational complexity theory, a problem with decision making is said to be NP-complete when it is both in NP and NP-hard. What does NP mean? **C**

A Non Polynomial time
B Non-deterministic Probabilistic
C Non-deterministic Polynomial time
D Non Probabilistic time

150. Which of the following graph problems are known to be in NP? **B**

A Is the length of the longest simple path k ?
B Is the length of the longest simple path k ?
C Is the length of the longest simple path = k ?
D Find the length of the longest simple path