Set 1

Q. The elements of an array are stored successively in memory cells because

(a)by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated

(b)To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later

(c)To make the process accurate

(d)None of the above

Q. The running time of quick sort depends heavily on the selection of

(a)No of inputs

(b)Arrangement of elements in array

(c)Size o elements

(d)pivot element

Q. Which sorting algorithn is faster :

(a)O(n^2)

(b)O(nlogn)

(c)O(n+k)

(d)O(n^3)

Q. Finding the location of the element with a given value is:

(a)Traversal

(b)Search

(c)Sort

(d)None of above

Q. The operation of processing each element in the list is known as

(a)Sorting

(b)Merging

(c)Inserting

[✓ (d)Traversal]

Q. Which of the following data structure is linear data structure?

(a)Trees

(b)Graphs

[✓ (c)Arrays]

(d)None of above

Q. Which of the following data structure is not linear data structure?

(a)Arrays

(b)Linked lists

(c)Both of above

[✓ (d)None of above]

Q. Merge sort uses

[✓ (a)Divide and conquer strategy]

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(c)Array

(d)Link List

Q. The complexity of merge sort algorithm is

(a)O(n)

(b)O(log n)

[✓ (c)O(n2)]

(d)O(n log n)

Q. The complexity of Bubble sort algorithm is

(a)O(n)

(b)O(log n)

(c)O(n2)

(d)O(n log n)

Q. The complexity of Binary search algorithm is

(a)O(n)

(b)O(log)

(c)O(n2)

(d)O(n log n)

Q. The complexity of linear search algorithm is

(a)O(n)

(b)O(log n)

(c)O(n2)

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Q. The complexity of the average case of an algorithm is

(a)Much more complicated to analyze than that of worst case

(b)Much more simpler to analyze than that of worst case

(c)Sometimes more complicated and some other times simpler than that of worst case

(d)None or above

Q. The Average case occur in linear search algorithm

(a)When Item is somewhere in the middle of the array

(b)When Item is not in the array at all

(c)When Item is the last element in the array

(d)When Item is the last element in the array or is not there at all

Q. The Worst case occur in linear search algorithm when

(a)Item is somewhere in the middle of the array

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(c)Item is the last element in the array

[✓ (d)Item is the last element in the array or is not there at all]

Q. Which of the following case does not exist in complexity theory

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(c)Average case

[✓ (d)Null case]

Q. The space factor when determining the efficiency of algorithm is measured by

[✓ (a)Counting the maximum memory needed by the algorithm]

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zQ. The time factor when determining the efficiency of algorithm is measured by

(a)Counting microseconds

[✓ (b)Counting the number of key operations]

(c)Counting the number of statements

(d)Counting the kilobytes of algorithm

Q. Two main measures for the efficiency of an algorithm are

(a)Processor and memory

(b)Complexity and capacity

[✓ (c)Time and space]

(d)Data and space

Q. The relationship between number of back edges and number of cycles in DFS is,

(a)Both are equal

(b)Back edges are half of cycles

(c)Back edges are one quarter of cycles

(d)There is no relationship between no. of edges and cycles

Q. Heaps can be stored in arrays without using any pointers; this is due to the ______________ nature of the binary tree,Select correct option:

[✓ (a)left-complete]

(b)right-complete

(c)right-complete

(d)tree leave

Q. If algorithm A has running time 7n^2 + 2n + 3 and algorithm B has running time 2n^2, then

[✓ (a)Both have same asymptotic time complexity]

(b)A is asymptotically greater

(c)B is asymptotically greater

(d)None of others

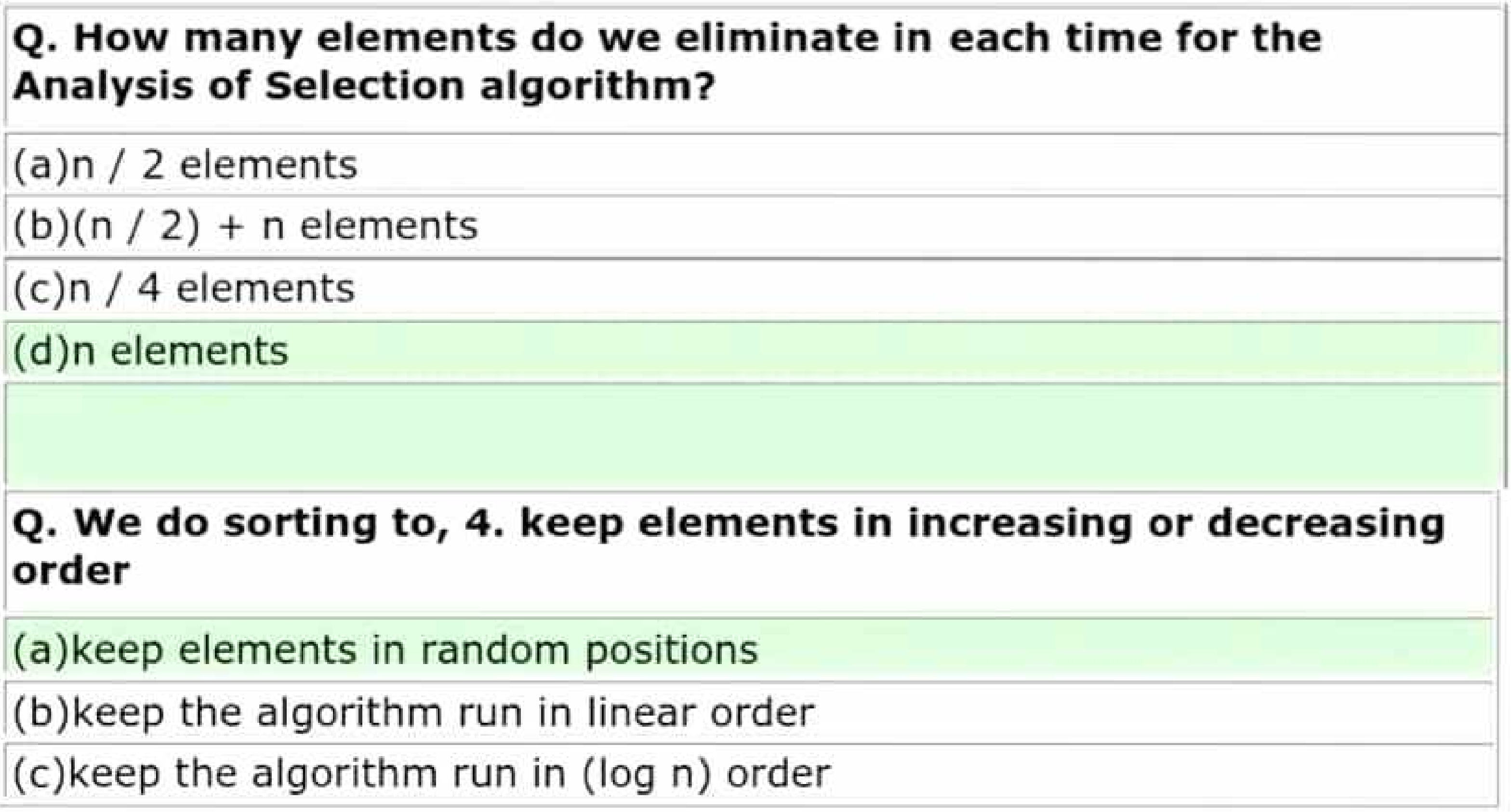
Q. What is the solution to the recurrence T(n) = T(n/2)+n .

[✓ (a)O(logn)]

(b)O(n)

(c)O(nlogn)

(d)O(n^2)



Q. How many elements do we eliminate in each time for the Analysis of Selection algorithm?

(a)n / 2 elements

(b)(n / 2) + n elements

(c)n / 4 elements

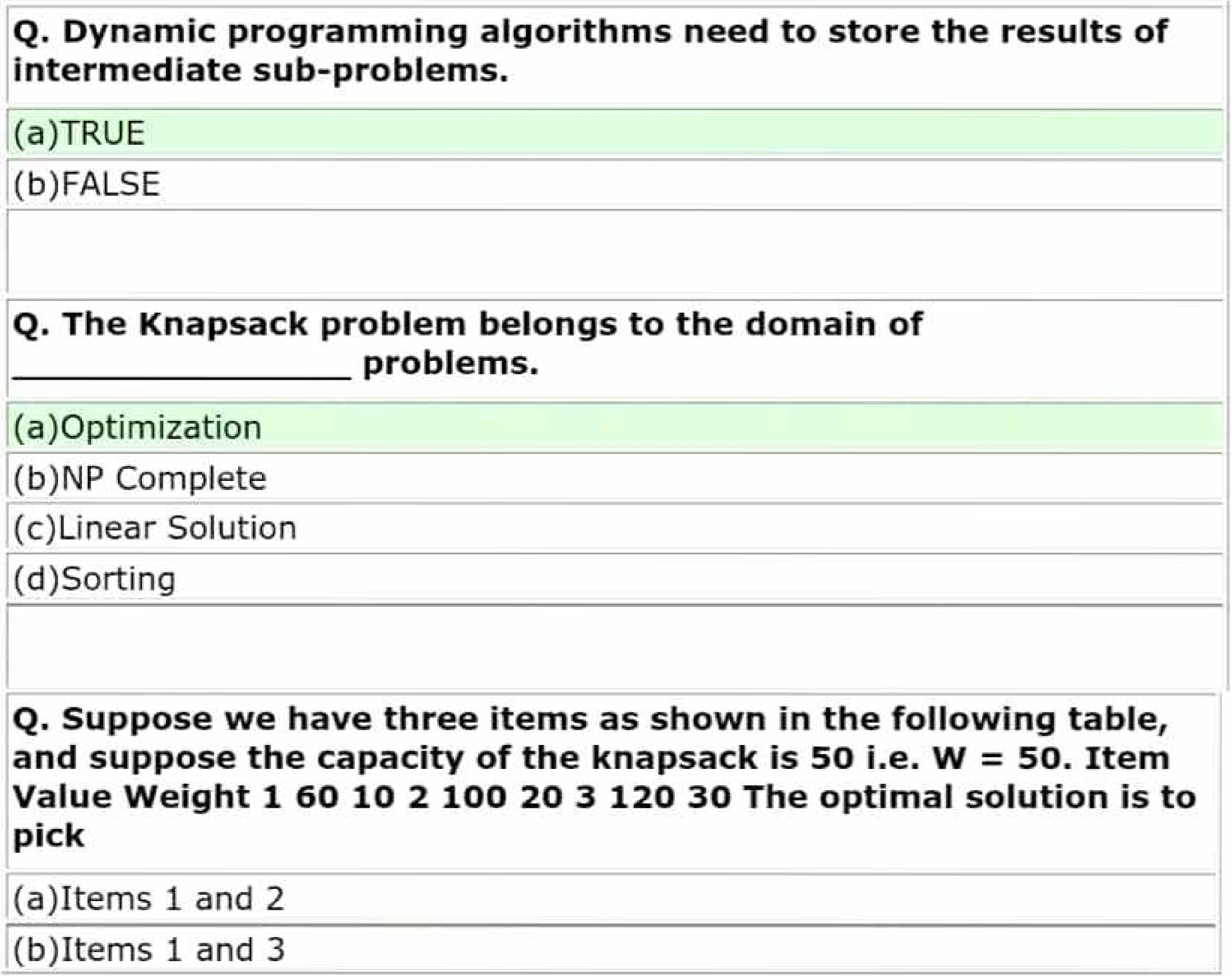
(d)n elements

Q. We do sorting to, 4. keep elements in increasing or decreasing order

(a)keep elements in random positions

(b)keep the algorithm run in linear order

(c)keep the algorithm run in (log n) order



Q. Dynamic programming algorithms need to store the results of intermediate sub-problems.

(a)TRUE

(b)FALSE

Q. The Knapsack problem belongs to the domain of ____________________ problems.

(a)Optimization

(b)NP Complete

(c)Linear Solution

(d)Sorting

Q. Suppose we have three items as shown in the following table, and suppose the capacity of the knapsack is 50 i.e. W = 50. Item Value Weight 1 60 10 2 100 20 3 120 30 The optimal solution is to pick

(a)Items 1 and 2

(b)Items 1 and 3

[✓ (c)Items 2 and 3]

(d)None of these

Q. What is the solution to the recurrence T(n) = T(n/2)+n .

[✓ (a)O(logn)]

(b)O(n)

(c)O(nlogn)

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Q. Heaps can be stored in arrays without using any pointers; this is due to the ________________ nature of the binary tree,Select correct option:

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(b)right-complete

(c)tree nodes

(d)tree leave

Q. The complexity of Bubble sort algorithm is

(a)O(n)

(b)O(log n)

(c)O(n2)

(d)O(n log n)

Q. The complexity of Binary search algorithm is

(a)O(n)

(b)O(log)

(c)O(n2)

(d)O(n log n)

Q. The complexity of linear search algorithm is

(a)O(n)

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Q. The complexity of the average case of an algorithm is

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Q. Which of the following case does not exist in complexity theory
(a)Best case
(b)Worst case
(c)Average case
(d)Null case

Q. The space factor when determining the efficiency of algorithm is measured by
(a)Counting the maximum memory needed by the algorithm
(b)Counting the minimum memory needed by the algorithm
(c)Counting the average memory needed by the algorithm
(d)Counting the maximum disk space needed by the algorithm

Q. The time factor when determining the efficiency of algorithm is measured by
(a)Counting microseconds
(b)Counting the number of key operations
(c)Counting the number of statements
(d)Counting the kilobytes of algorithm

Q. Two main measures for the efficiency of an algorithm are
(a)Processor and memory
(b)Complexity and capacity
(c)Time and space
(d)Data and space

Set 2

Q. The indirect change of the values of a variable in one module by

another module is called

(a)internal change

(b)inter-module change

(c)side effect

(d)side-module update

Q. The complexity of merge sort algorithm is

(a)O(n)

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Q. The complexity of linear search algorithm is

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(a)O(n^2)

(b)O(nlogn)

(c)O(n+k)

(d)O(n^3)

Q. We do sorting to,

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(b)keep the algorithm run in linear order

(c)keep the algorithm run in (log n) order

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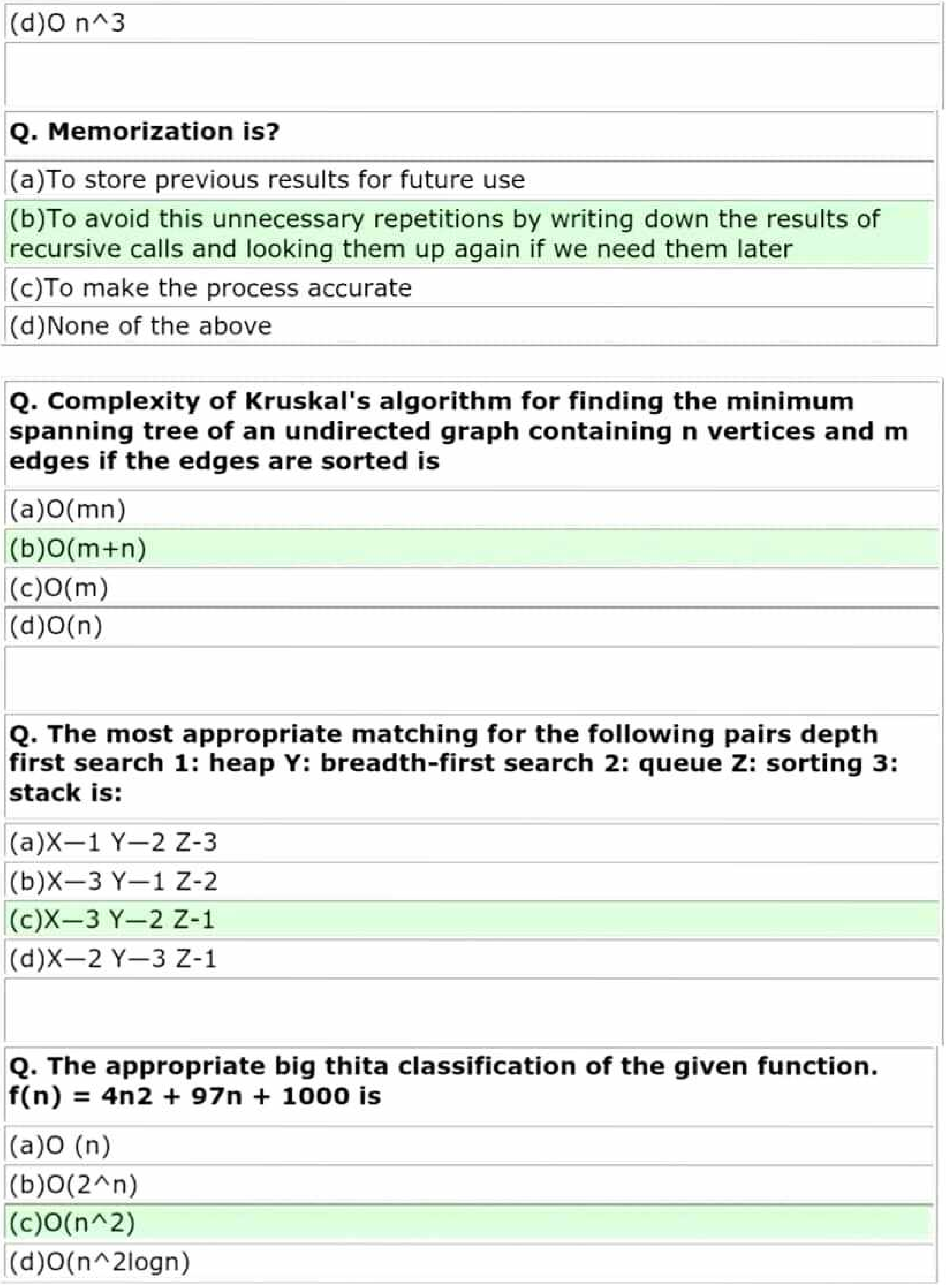

(d)O n^3

Q. Memorization is?

(a)To store previous results for future use

[✓ (b)To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later]

(c)To make the process accurate

(d)None of the above

Q. Complexity of Kruskal's algorithm for finding the minimum spanning tree of an undirected graph containing n vertices and m edges if the edges are sorted is

(a)O(mn)

[✓ (b)O(m+n)]

(c)O(m)

(d)O(n)

Q. The most appropriate matching for the following pairs depth first search 1: heap Y: breadth-first search 2: queue Z: sorting 3: stack is:

(a)X—1 Y—2 Z-3

(b)X—3 Y—1 Z-2

[✓ (c)X—3 Y—2 Z-1]

(d)X—2 Y—3 Z-1

Q. The appropriate big thita classification of the given function. f(n) = 4n2 + 97n + 1000 is

(a)O (n)

(b)O(2^n)

[✓ (c)O(n^2)]

(d)O(n^2logn)

Q. Consider the following Algorithm: Factorial (n){ if (n=1) return 1 else return (n * Factorial(n-1)) } Recurrence for the following algorithm is:

(a)T(n) = T(n-1) +1

(b)T(n) = nT(n-1) +1

(2c)T(n)= T(n-1) +n

[✓ (d)T(n)=T(n(n-1)) +1]

Q. The elements of an array are stored successively in memory cells because

[✓ (a)by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated]

(b)To avoid this unnecessary repetitions by writing down the results of recursive calls and looking them up again if we need them later

(c)To make the process accurate

(d)None of the above

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(a)No of inputs

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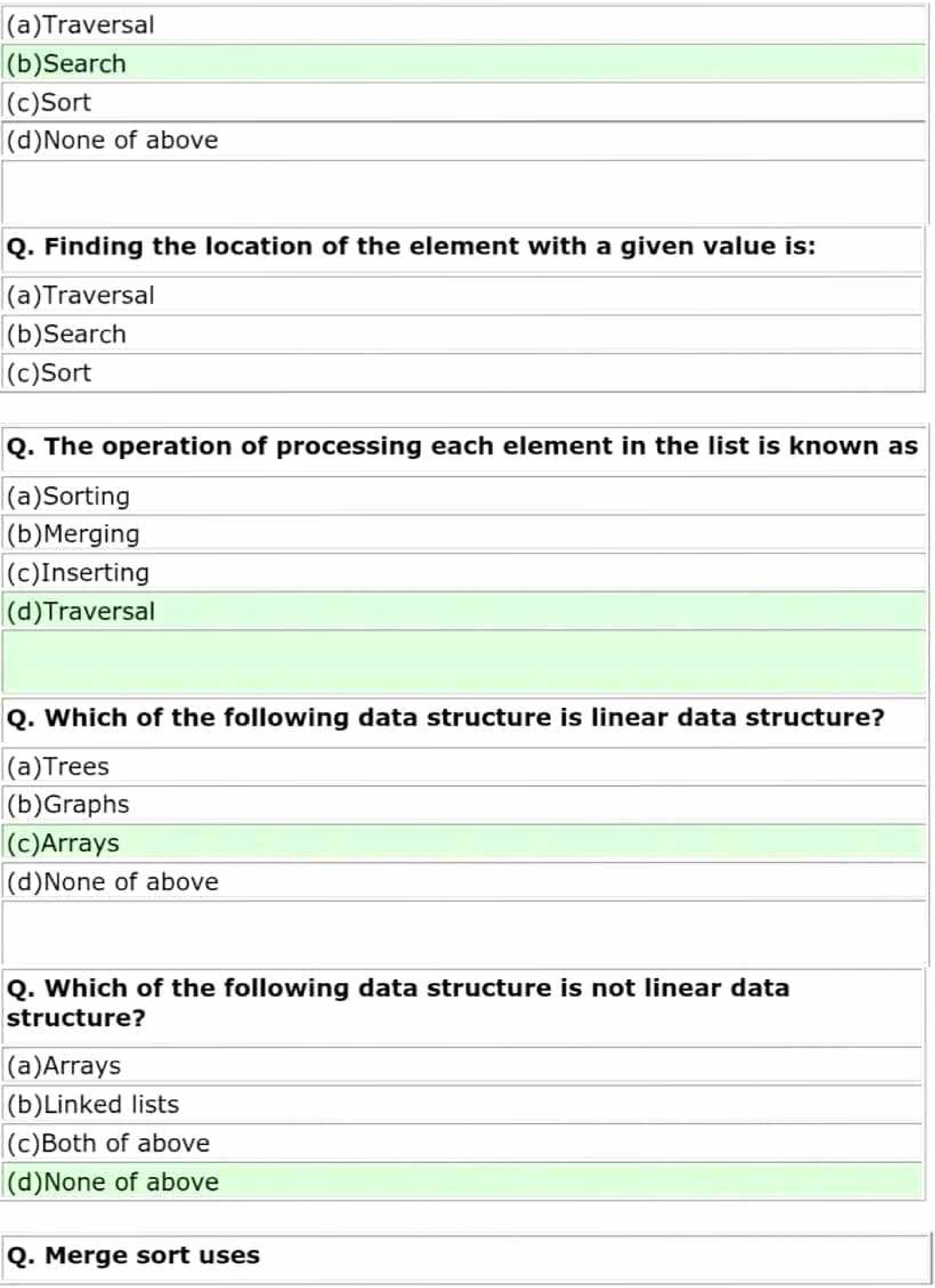
Q. Finding the location of the element with a given value is:



(a)Traversal

(b)Search

(c)Sort

(d)None of above

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(b)Search

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Q. The operation of processing each element in the list is known as

(a)Sorting

(b)Merging

(c)Inserting

(d)Traversal

Q. Which of the following data structure is linear data structure?

(a)Trees

(b)Graphs

(c)Arrays

(d)None of above

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Set 3

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f(n) = 4n2 + 97n + 1000 is

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(a)Both are equal

(b)Back edges are half of cycles

(c)Back edges are one quarter of cycles

(d)There is no relationship between no. of edges and cycles

Q. Suppose that a graph G = (V,E) is implemented using adjacency lists. What is thecomplexity of a breadth-first traversal of G?

(a)O(|V |^2)

(b)O(|V | |E|)

(c)O(|V | + |E|)

(d)O(|V |^2|E|)

Q. A dense undirected graph is:

(a)A graph in which E = O(V^2)

(b)A graph in which E = O(V)

(c)A graph in which E = O(log V)

(d)All items above may be used to characterize a dense undirected graph.

Q. Which of the following case does not exist in complexity theory

(a)Best case

(b)Worst case

(c)Average case

(d)Null case

Q. The space factor when determining the efficiency of algorithm is measured by

[✓ (a)Counting the maximum memory needed by the algorithm]

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(a)O(mn) c) O(m)

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(d)X—2 Y—3 Z-1

Set 4

Q. Kruskal's algorithm (choose best non-cycle edge) is better than Prim's (choose best tree edge) when the graph has relatively few edges.

(a)True

(b)False

Q. Which statement is true?

(a)If a dynamic-programming problem satisfies the optimal-substructure property,then a locally optimal solution is globally optimal.

(b)If a greedy choice property satisfies the optimal-substructure property, then alocally optimal solution is globally optimal.

[✓ (c)both of above]

(d)none of above

Q. The difference between Prim's algorithm and Dijkstra's algorithm is that Dijkstra's algorithm uses a different key.

[✓ (a)True]

(b)False

Q. The elements of an array are stored successively in memory cells because

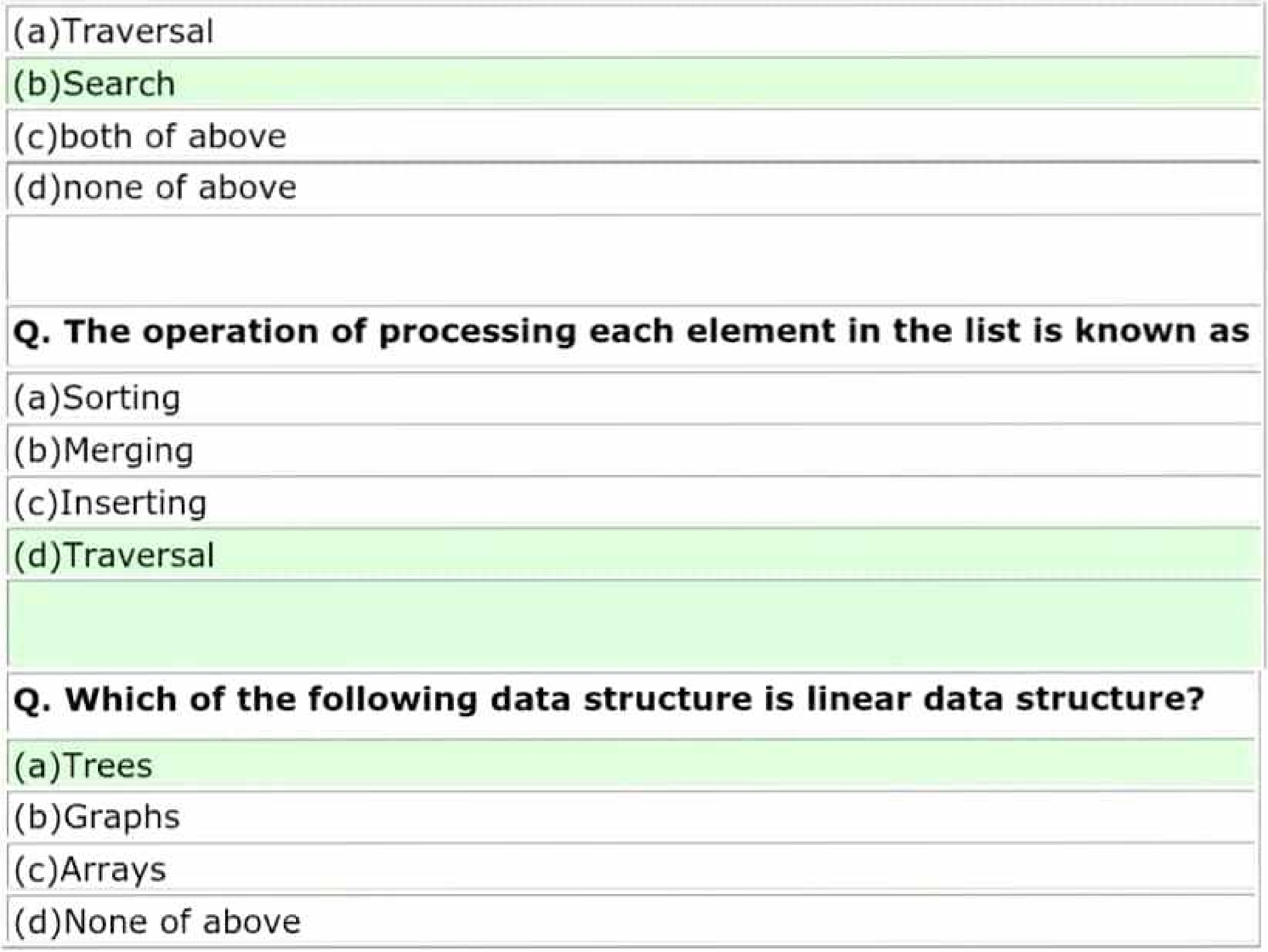
[✓ (a)by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated]

(b)the architecture of computer memory does not allow arrays to store other than serially

(c)both of above

(d)none of above

Q. Finding the location of the element with a given value is:



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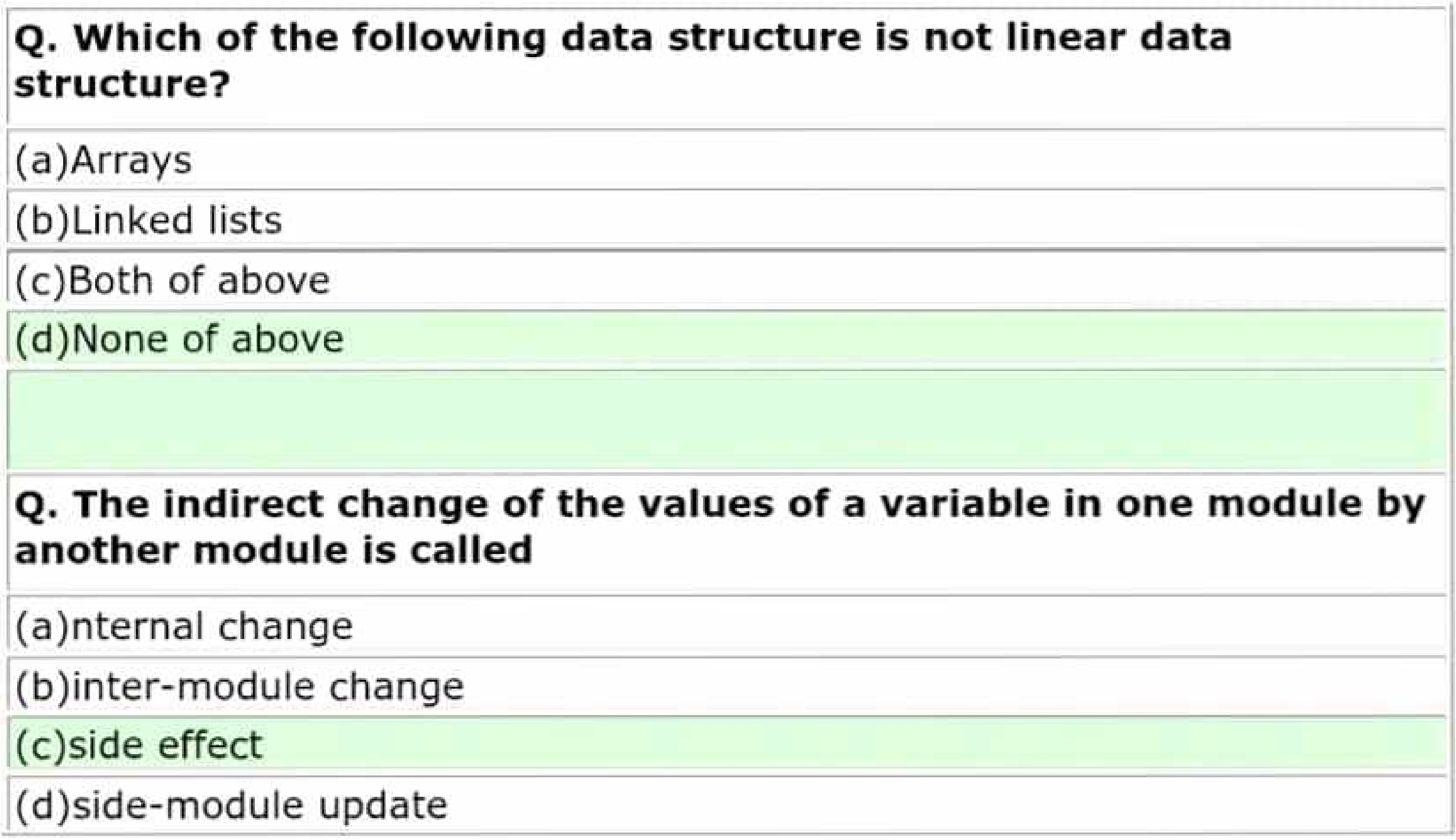

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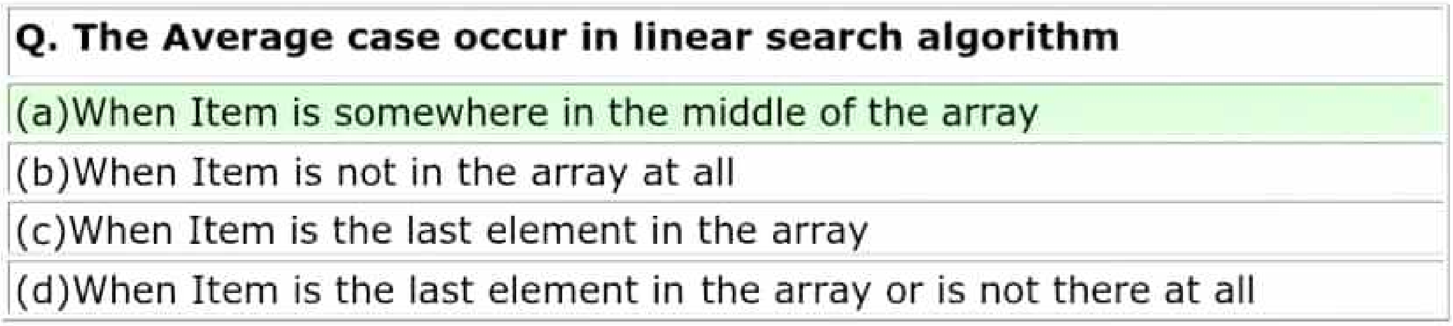

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