Unit 2 - Week 0

Assignment 0

Due on 2023-01-27, 23:59 IST.

Note: This assignment is for practice and will not be graded.

1. Consider two sets A and B. The set A - (A  U  B) is equivalent to
   - A
   - B
   - A  N  B
   - A  U  B

   Accepted Answers:
   - A

2. Suppose A is a set with 4 elements. The number of elements in the power set of A is
   - 1
   - 2
   - 4
   - 8

   Accepted Answers:
   - 8

3. Consider the sets A and B with cardinalities 3 and 2 respectively. The number of functions from A to B is
   - 0
   - 1
   - 2
   - 6

   Accepted Answers:
   - 6

4. Consider the sets A = {1, 2, 3}, B = {a, b, c} and C = {1, 2, 3}. The set (A  N  B)  N  C is
   - {1, 2, 3, a, b, c}
   - {1, 2, 3, a, b}
   - {1, 2, 3, a, b, c, 1, 2, 3}
   - {1, 2, 3, a, b, c, 1, 2, 3, a, b, c, 1, 2, 3}

   Accepted Answers:
   - {1, 2, 3, a, b}

5. Consider the following binary relation on set A = {a, b, c, d, e, f}
   - R  =  {(a, b), (b, c), (c, d), (d, e), (e, f)}
   - R is reflexive
   - R is symmetric
   - R is transitive
   - R is symmetric and reflexive

   Accepted Answers:
   - R is symmetric and reflexive

6. The Boolean formula (p  U  q)  N  q  =  p is
   - True
   - False
   - Contingent
   - Invalid

   Accepted Answers:
   - True

7. Suppose G is a group of type [2], it is stored in row-major order starting from address 100 in a memory with word length of 2 bytes. Assume that each group element requires 2 bytes. The address of X123 is
   - 110
   - 112
   - 114
   - 116

   Accepted Answers:
   - 112

8. Suppose the set of elements {5, 3, 4, 12, 14, 10, 5, 1, 8} are inserted into a binary search tree in the given order. Which of the following is NOT a leaf element?
   - {1}
   - {5}
   - {8}
   - {14}

   Accepted Answers:
   - {14}

9. Consider the hash function h(x) = x mod 11. The hashed elements are stored into an array A[1] and the collisions are resolved using chaining. Suppose the set {13, 24, 3, 15, 19, 36, 1, 18, 30} are hashed into hash table A[0:10], then the length of the longest chain (without counting the hash table elements) is
   - 1
   - 2
   - 3
   - 4

   Accepted Answers:
   - 3

10. Consider the following sets:
    - C = {a, b, c, d, e, f}
    - D = {a, b, c, d, e}

    The correct match between elements of C and D is
    - p  N  q
    - p  U  q
    - p  =  q
    - p   N  q

    Accepted Answers:
    - p  =  q