SEC 01 (Logic and Sets)

F.M: 10 TIME: 30 MIN

* Required

1. Email *

2. NAME *

3. UNIVERSITY REGISTRATION NUMBER *

4. UNIVERSITY ROLL NUMBER *

Untitled Section

5.

1. An argument or statement that has the same form as a given argument form or statement
a. Truth Table b. Substitution Instance c. Sufficient Condition d. Statement Variables

Mark only one oval.

- A
- B
- C
- D

6.

2. A statement that contains at least one simple statement as a component
a. Compound Statement b. Contingent Statement c. Consistent Statements d. Simple Statement

Mark only one oval.

- A
- B
- C
- D

7.

3. Two sets are called disjoint if there _____ is the empty set.
a. Union b. Difference c. Intersection d. Complement

Mark only one oval.

- A
- B
- C
- D

8.

4. The bit strings for the sets are 1111100000 and 1010101010. The union of these sets is
a. 1010100000
b. 1010101101
c. 1111111100
d. 1111101010

Mark only one oval.

- A
- B
- C
- D

9.

5. The set difference of the set A with null set is _____
a. A b. Null c. U d. B

Mark only one oval.

- A
- B
- C
- D

10.

6. The less-than relation, <, on a set of real numbers is _____
a. not a partial ordering because it is not asymmetric and irreflexive equals antisymmetric
b. a partial ordering since it is asymmetric and reflexive
c. a partial ordering since it is antisymmetric and reflexive
d. not a partial ordering because it is not antisymmetric and reflexive

Mark only one oval.

- A
- B
- C
- D

11.

7. Suppose X = {a, b, c, d} and π_1 is the partition of X, π_1 = {{a, b, c}, d}. The number of ordered pairs of the equivalence relations induced by _____
a. 15 b. 10 c. 34 d. 5

Mark only one oval.

- A
- B
- C
- D

12.

8. The less-than relation, <, on a set of real numbers is _____
a. not a partial ordering because it is not asymmetric and irreflexive equals antisymmetric
b. a partial ordering since it is asymmetric and reflexive
c. a partial ordering since it is antisymmetric and reflexive
d. not a partial ordering because it is not antisymmetric and reflexive

Mark only one oval.

- A
- B
- C
- D

13.

9. A partial order ≤ is defined on the set S = {x, b_1, b_2, ... b_n, y} as $x \leq b_i$ for all i and $b_i \leq y$ for all i, where $n \geq 1$. The number of total orders on the set S which contain the partial order ≤ is _____

a. n+4 b. n^2 c. n! d. 3

Mark only one oval.

- A
- B
- C
- D

14.

10. Let (A, ≤) be a partial order with two minimal elements a, b and a maximum element c. Let P:A –> {True, False} be a predicate defined on A. Suppose that P(a) = True, P(b) = False and P(a) ⇒ P(b) for all satisfying a ≤ b, where ⇒ stands for logical implication. Which of the following statements cannot be true?
a. P(x) = True for all x S such that $x \neq b$
b. P(x) = False for all $x \in S$ such that $b \leq x$ and $x \neq c$
c. P(x) = False for all $x \in S$ such that $x \neq a$ and $x \neq c$
d. P(x) = False for all $x \in S$ such that $a \leq x$ and $b \leq x$

Mark only one oval.

- A
- B
- C
- D