Unit 4 - Week 3: Mathematical Logic And Set Theory

Assignment 3

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-08-21, 23:59 IST.

1) Which of the following sets is/are equal to $\{1,2\}$? *1 point*

(P) $\{x|x^2-5x+6=0\}$

(Q) $\{x|x^3-7x^2+16x-12=0\}$

(R) $\{x|x$ is a prime factor of $108\}$

- only P and Q
- all of P, Q and R
- only P and R
- only Q and R

No, the answer is incorrect.
Score: 0
Accepted Answers:
all of P, Q and R

2) *Gödel's* completeness theorem asserts that --- *1 point*

- The first order proof system with Peano's axioms proves every statement true in the standard model
- Peano's axioms form a consistent set of formulae
- The first order proof system can prove all logical consequences of the proper axioms
- The first order proof system proves only logical consequences of the proper axioms

No, the answer is incorrect.
Score: 0
Accepted Answers:
The first order proof system can prove all logical consequences of the proper axioms

3) The first order proof system is sound because ---- *1 point*

- The first order proof system with Peano's axioms proves every statement true in the standard model
- All the logical axioms of the first order proof system are logically valid
- The first order proof system can prove all logical consequences of the proper axioms
- The first order proof system proves only logical consequences of the proper axioms

No, the answer is incorrect.
Score: 0
Accepted Answers:
The first order proof system proves only logical consequences of the proper axioms

4) If $A=\{1,2,3\}$ and $B=\{2,3,4\}$, then which of the following is a member of 2^A-2^B ? *1 point*

- $\{2,3\}$
- $\{1,3\}$
- $\{2\}$
- $\{3\}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\{1,3\}$

5) What is $|P\times Q\times R|$, if *1 point*

$P=\{x|x^2-3x+2=0\}$,

$Q=\{3,4\}$ and

$R=\{x|x$ is a natural number and $x^2+3x+2=0\}$?

- 8
- 4
- 0
- 2

No, the answer is incorrect.
Score: 0
Accepted Answers:
0

6) If $Q=\{\{2,3\},\{3,4\},\{8,3\},3\}$, then $\cap A$ is --- *1 point*

- undefined
- $\emptyset$
- $\{3\}$
- 3

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\emptyset$

7) If the successor of a set a is $a^+=a\cup\{a\}$, and $\mathbf{0}=\emptyset$, and for every natural number n, *1 point*

$\mathbf{n+1=n^+}$, then which of the following is true?

- $3=\{0,1,2\}$
- $4=2^2$
- $2\in 3$
- $2\subseteq 3$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$4=2^2$

8) Suppose for natural numbers x and y, xRy iff 11 divides x-y. Then which of the following is FALSE? *1 point*

- R is anti-symmetric
- R is symmetric
- R is transitive
- R is reflexive

No, the answer is incorrect.
Score: 0
Accepted Answers:
R is anti-symmetric