# Quiz 5

Deadline	Wednesday, 09 October 2019 at 4:00PM
Latest Submission	Wednesday, 09 October 2019 at 12:49AM
Raw Mark	5.00/5.00 (100.00%)
Late Penalty	N/A
Final Mark	5.00/5.00 (100.00%)

### Question 1 (1 mark)

Consider f,g: $\mathbb{Z} \rightarrow \mathbb{Z}$  given by:

- f(n) = 2n
- g(n) = n div 2

Which of the following statements are true? Select all that apply

(a) 🗹	f is an injection
(b)	g is an injection
(c)	f∘g is an injection
(d) 🗹	g∘f is an injection
(e)	f is a surjection
(f) 🖋	g is a surjection
(g)	f∘g is a surjection
(h) 🗹	g∘f is a surjection

✓ Your response was correct.

Mark: max(0.25 + 0.25 + 0.25 + 0.25, 0) = 1.00

#### Question 2 (1 mark)

Let F denote the set of functions from  $\mathbb N$  to  $\mathbb N$ . Define the relation R on F×F as follows:

 $(f,g) \in R$  if  $f(n) \le g(n)$  for infinitely many  $n \in \mathbb{N}$ 

Which of the following properties does R have? Select all that apply

(a) 🖋	Reflexivity (R)
(b)	Antireflexivity (AR)
(c)	Symmetry (S)
(d)	Antisymmetry (AS)
(e)	Transitivity (T)

✓ Your response was correct.

Mark: 1.00

#### Question 3 (1 mark)

Let F denote the set of functions from  $\mathbb N$  to  $\mathbb N$ . Define the relation R on F×F as follows:

 $(f,g) \in R$  if  $f(n) \neq g(n)$  for only finitely many  $n \in \mathbb{N}$ 

Which of the following properties does R have? Select all that apply

(a) 🗹	Reflexivity (R)
(b)	Antireflexivity (AR)
(c) 🗹	Symmetry (S)
(d)	Antisymmetry (AS)
(e) <b></b> €	Transitivity (T)

✓ Your response was correct.

Mark: max(0.33 + 0.33 + 0.33, 0) = 1.00

#### Question 4 (1 mark)

Sort the following words over  $\Sigma = \{0,1\}$  in **lexicographic** ordering

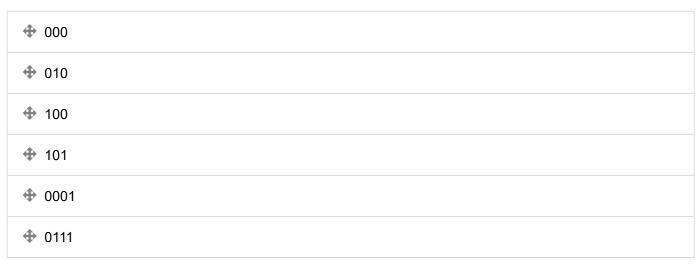
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<b>\$</b> 0001	
<b>•</b> 010	
<b>•</b> 0111	
<b>\$</b> 100	
<b>\$</b> 101	

✓ Your response was correct.

Mark: 1.00

## Question 5 (1 mark)

Sort the following words over  $\Sigma = \{0,1\}$  in **lenlex** ordering



✓ Your response was correct.

Mark: 1.00