higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NASIENRIGLYN

NASIONALE SERTIFIKAAT

LOGIKASTELSELS N2

4 APRIL 2018

Hierdie nasienriglyn bestaan uit 6 bladsye.

Kopiereg voorbehou

AFDELING A

VRAAG 1

1.1
1.1.1 D
1.1.2 C
1.1.3 B
1.1.4 A
1.1.5 B
1.1.6 A
1.1.7 A
1.1.8 B
1.1.9 A
1.1.10 C

(10 × 1) (10)

1.2
1.2.1 Onwaar
1.2.2 Onwaar
1.2.3 Waar
1.2.4 Waar
1.2.5 Onwaar

(5 × 1) (5)
[15]

TOTAAL AFDELING A: 15

AFDELING B

VRAAG 2

2.1 0 – 0 = 0 ✓
1 – 0 = 1 ✓
1 – 1 = 0 ✓
0 – 1 = 1 op voorwaarde dat 1 geleen word van die MBS (mees beduidende syfer) (*MSD*) aan sy linkerkant ✓ (4)

2.2 2.2.1

2^5	2^4	2^3	2^2	2^1	2^0
1	1	1	0	0	0
32	16	8	0	0	0

✓

$111000_2 = 32 + 16 + 8 + 0 + 0 + 0$ ✓
$= 54_{10}$ ✓

2.2.2

2^5	2^4	2^3	2^2	2^1	2^0
1	1	0	0	1	1
32	16	0	0	2	1

✓

$110011_2 = 32 + 16 + 0 + 0 + 2 + 1$ ✓
$= 51_{10}$ ✓

(2 × 3) (6)

2.3 2.3.1

2	27	Res	
2	13	1	
2	6	1	✓
2	3	0	
2	1	1	✓
2	0	1	

$27_{10} = 11011_2$ ✓

2.3.2

2	83	Res	
2	41	1	
2	20	1	✓
2	10	0	
2	5	0	
2	2	1	
2	1	0	✓
2	0	1	

$83_{10} = 1010011_2$ ✓

(2 × 3) (6)

2.4 $120_{10} \div 15_{10}$

	64	**32**	**16**	**8**	**4**	**2**	**1**	
120=	1	1	1	1	0	0	0	✓
15 =				1	1	1	1	✓

```
                          1  0  0  0 ✓
 1  1  1  1 | 1  1  1  1  0  0  0
              1  1  1  1
              0  0  0  0  0  0
                 0  0  0  0
              ---------------------
              0  0  0  0  0
                 0  0  0  0 ✓
              ---------------------
                 0  0  0  0
```

(4)

2.5 Die 2421 BKD-kode is ’n beswaarde kode asook ’n selfkomplementerende kode. ✓ Om te omskep word dieselfde metode gebruik tot op desimaal 4 en daarna word die getalle die komplemente van die vorige getalle. ✓ ✓ (3)

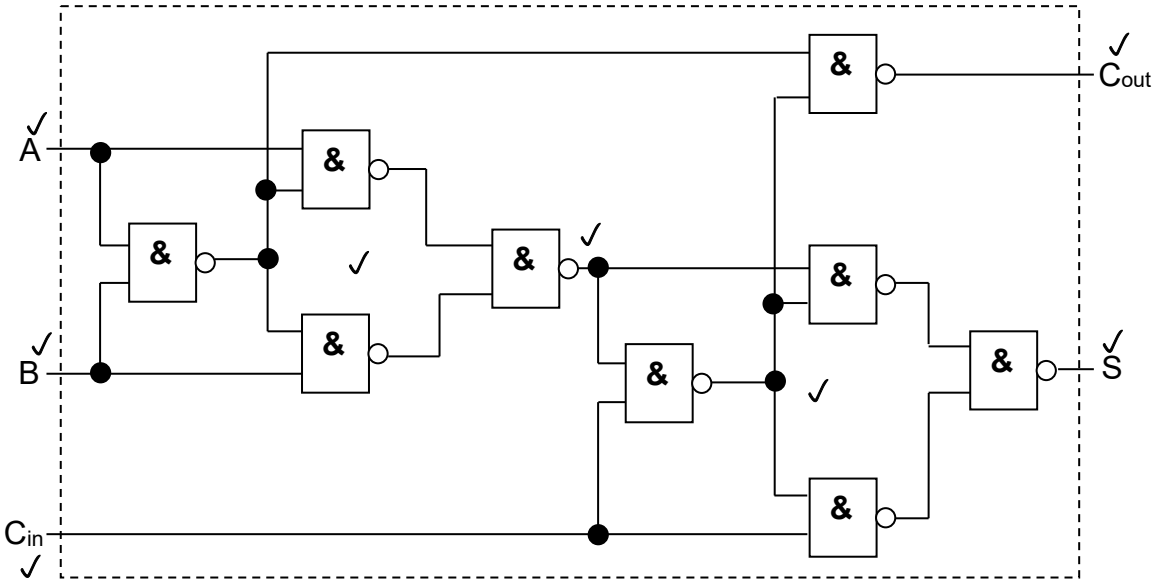
2.6 101110101000 XS3 tot desimaal

1011	**1010**	**1000**
-11	-11	-11
1000	0111	0101
↓	↓	↓
8 ✓	7 ✓	4 ✓

1011	**1010**	**1000**
↓	↓	↓
11	10	8
-3	-3	-3
8 ✓	7 ✓	4 ✓

101110101000 XS3 = 874_{10} ✓ (4)

2.7



(8)
[35]

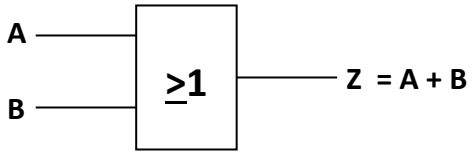
[label for diagram above: out = uit]

VRAAG 3

3.1 3.1.1 OF-hek (2)

3.1.2

✓ **A**	✓ **B**	✓ **Z**
0	0	0
0	1	1
1	0	1
1	1	1



(6)

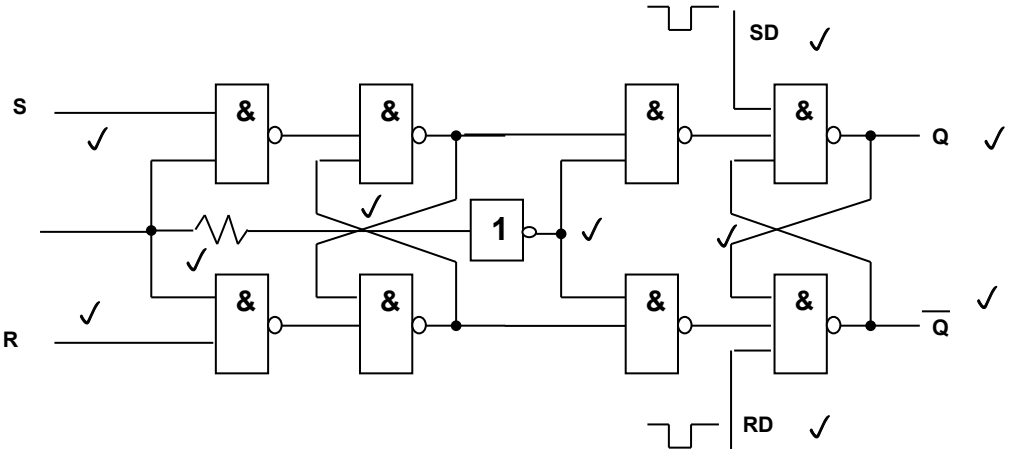
3.2 3.2.1 SR meester-slaaf (2)

3.2.2

S	R	Q	$\overline{Q}$	
0	0	Q_n	$\overline{Q_n}$	✓ ✓
0	1	0	1	✓
1	0	1	0	
1	1	Ongeldig		

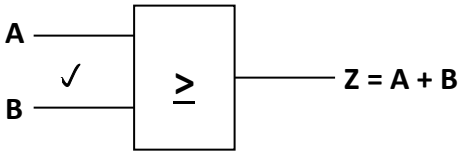
(3)

3.2.3



(10)

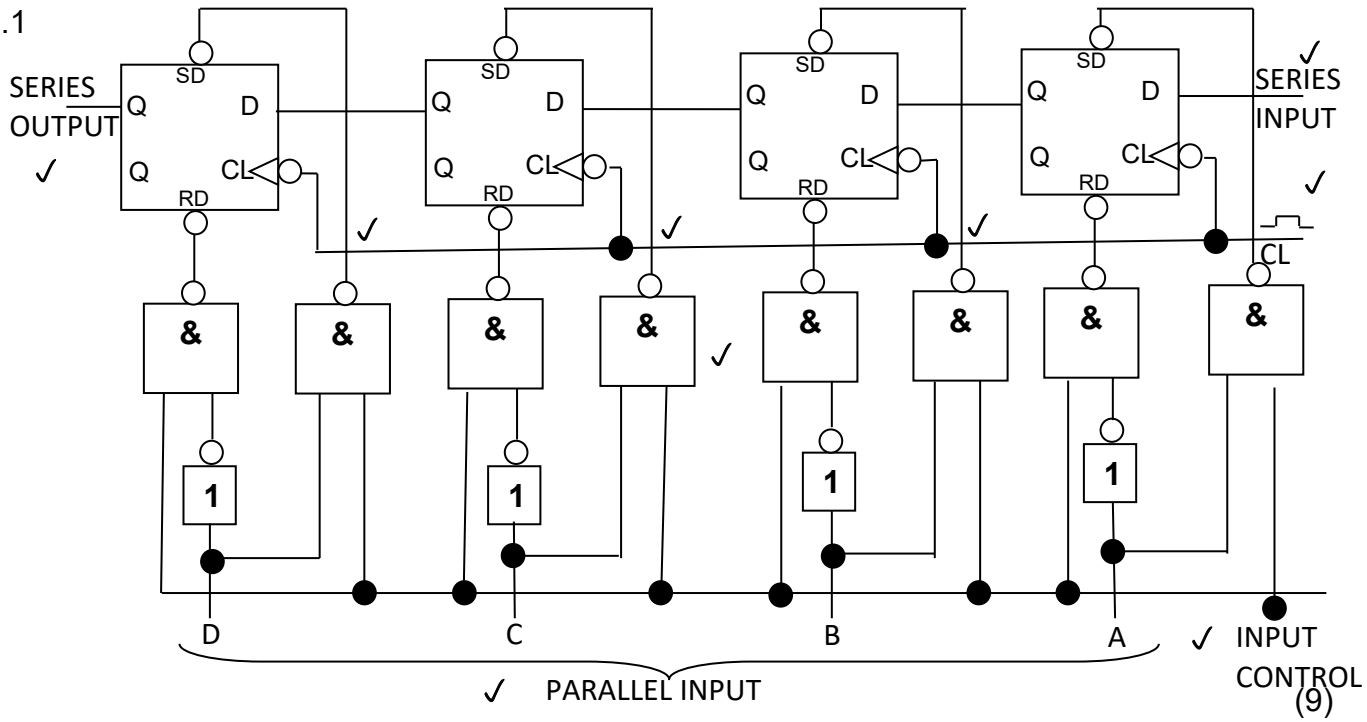
3.3



(2)
[25]

VRAAG 4

4.1



(9)

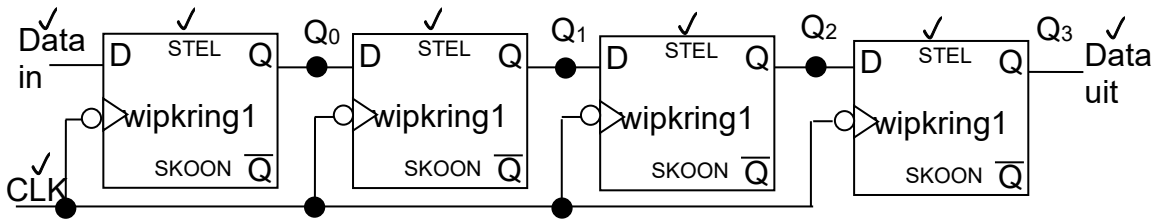
Series output	serie-afvoer
Series input	serie-toevoer
Parallel input	parallelle toevoer
Input control	toevoerbeheer

4.2

Klokpulse	✓	✓	✓	✓
	8	**4**	**2**	**1**
0	0	0	0	0
1	0	0	0	1
2	0	0	1	
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	0	0	0	
11	0	0	0	1

✓ (vir korrektheid) (5)

4.3



(7)

4.4 Die afvoer van series-in serie-uit (SISO) is in serie, ✓ ✓ **terwyl** die afvoer van serie-in parallel-uit (SIPO) in parallel is. ✓ ✓ (2 + 2) (4)

[25]

TOTAAL: 100

Kopiereg voorbehou