



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NASIENRIGLYN

NASIONALE SERTIFIKAAT

LOGIKASTELSLS N2

27 November 2025

Hierdie nasienriglyn bestaan uit 6 bladsye.

VRAAG 1

1.1 1.1.1 17_{10}

$$\begin{array}{rcl}
 17 \div 2 = 8 & r & 1 \\
 8 \div 2 = 4 & r & 0 \\
 4 \div 2 = 2 & r & 0 \\
 2 \div 2 = 1 & r & 0 \\
 1 \div 2 = 0 & r & 1
 \end{array}$$

↑

$$17_{10} = 10001_2 \checkmark$$

(2)

1.1.2 110010_2

$$1 \quad 1 \quad 0 \quad 0 \quad 1 \quad 0_2$$

$$= 2^5 + 2^4 + 2^1 \checkmark$$

$$= 32 + 16 + 2 \checkmark$$

$$= 50_{10} \checkmark$$

(3)

1.2 1.2.1

$$\begin{array}{r}
 1010 \\
 \times 1011 \\
 \hline
 1010 \checkmark \\
 10100 \checkmark \\
 + 1010000 \checkmark \\
 \hline
 1101110_2 \checkmark
 \end{array}$$

(4)

1.2.2

$$\begin{array}{r}
 1010011 \\
 110011 \\
 \hline
 100000_2 \checkmark \checkmark
 \end{array}$$

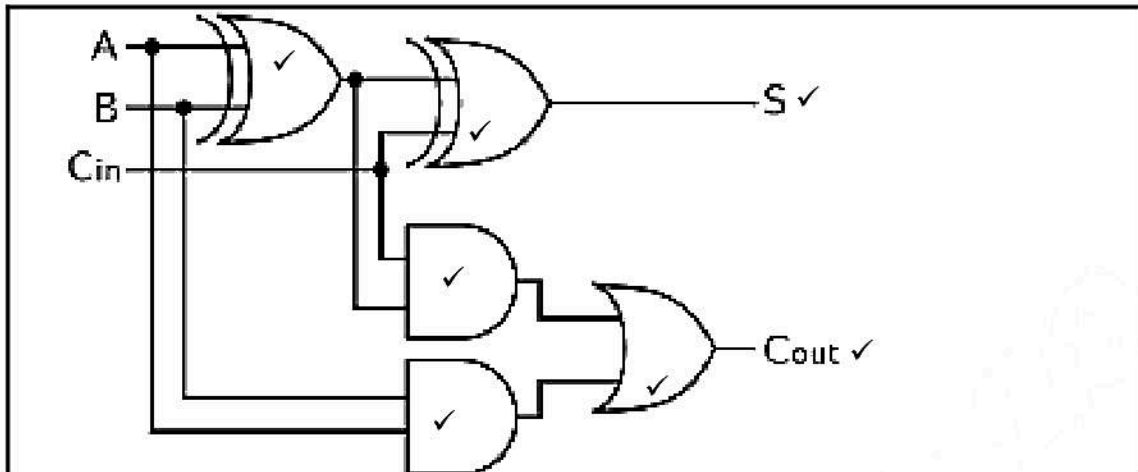
(2)

1.2.3

1	1	0	1	1	1	0	1	✓
	1	1	1	1	0			✓
			1	1	0			✓
				1	1	0		✓
					0	0	0	0
					0	0	0	0
					0	0	0	0

(3)

1.3



(7)

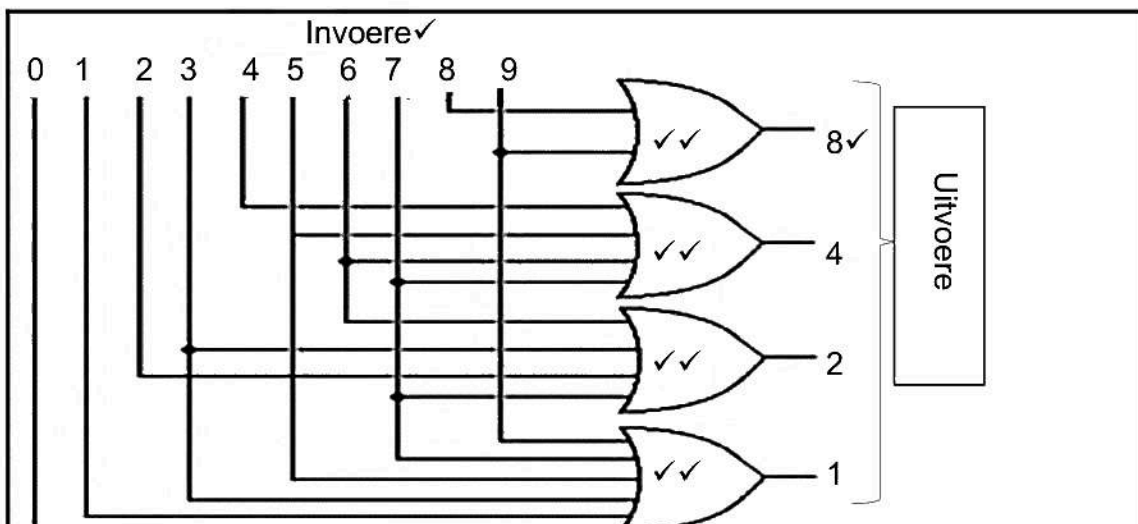
1.4

A	B	C	S	Co
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1
			✓✓	✓✓

(4)
[25]

VRAAG 2

2.1



(10)

2.2

- A Enkodeerder✓
- B Dekodeerder✓
- C Vertooneenheid✓

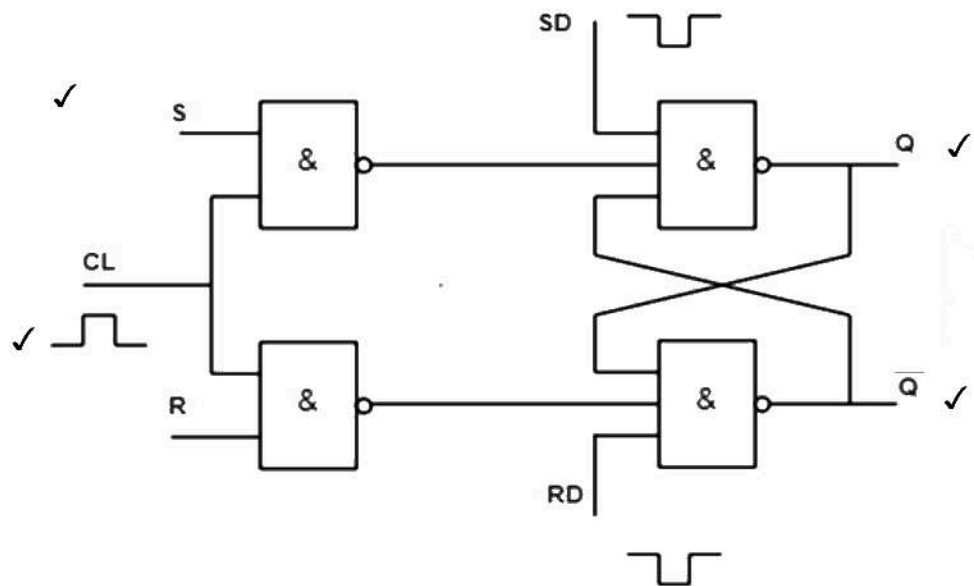
(1 × 3)

- 2.3 8421 BGD-kode **OF** 2421 BGD-kode✓ (1)
- 2.4 2.4.1
- | | | |
|-------|-------|-------|
| 5 | 7 | 3 |
| 2421 | 2421 | 2421 |
| 0110✓ | 1101✓ | 0011✓ |
- $573_{10} = 11011010011_{2421BCD}$
- 2.4.2
- | | | |
|-------|-------|-------|
| 9 | 8 | 6 |
| 8421 | 8421 | 8421 |
| 1001✓ | 1000✓ | 0110✓ |
- $986_{10} = 100110000110_{8421BCD}$
- 2.4.3
- | | | |
|-------|-------|-------|
| 0101 | 0111 | 1001 |
| -0011 | -0011 | -0011 |
| 0010 | 0100 | 0101 |
| 8421 | 8421 | 8421 |
| 2✓ | 4✓ | 5✓ |
- $10101111001_{XS3CODE} = 245_{10}$
- (3 × 3) (9)
- 2.5 2.5.1 Eenkomplement✓
- 2.5.2 0 en 9 ✓
- (1 × 2) (2)
- [25]**

VRAAG 3

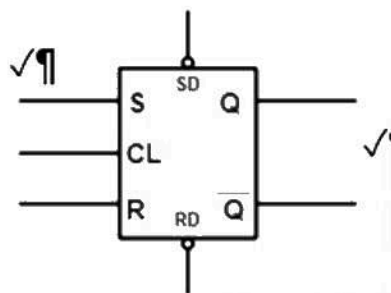
- 3.1 3.1.1 EN-hek,✓ NOF-hek,✓ uitsluitende OF-hek✓ en NEN-hek.✓ (4)
- 3.1.2 $G = AB, H = \overline{C + D}$ ✓ en $I = (\overline{E}F + EF)\overline{F}$ ✓ (3)
- 3.1.3 $Z = AB + \overline{C + D} + (\overline{E}F + EF)\overline{F}$ ✓ (1)
- 3.2 3.2.1 D✓
- 3.2.2 A✓
- 3.2.3 D✓
- 3.2.4 C✓
- 3.2.5 A✓
- 3.2.6 B✓
- 3.2.7 B✓
- (7 × 1) (7)

3.3 3.3.1



(4)

3.3.2



(2)

3.4 Sekondêre geheue is permanente of nievluggeheue ✓ wat data kan behou selfs as die krag afgeskakel word. ✓

(2)

3.5 Voorbeelde:

- Ponskaarte
- Magnetiese bande
- KS LAG (CD ROM)
- Stywe skyf
- Slapskyf
- Flitsaandrywer
- DVD
- Harde skyf

(Enige 2 × 1)

(2)

[25]

VRAAG 4

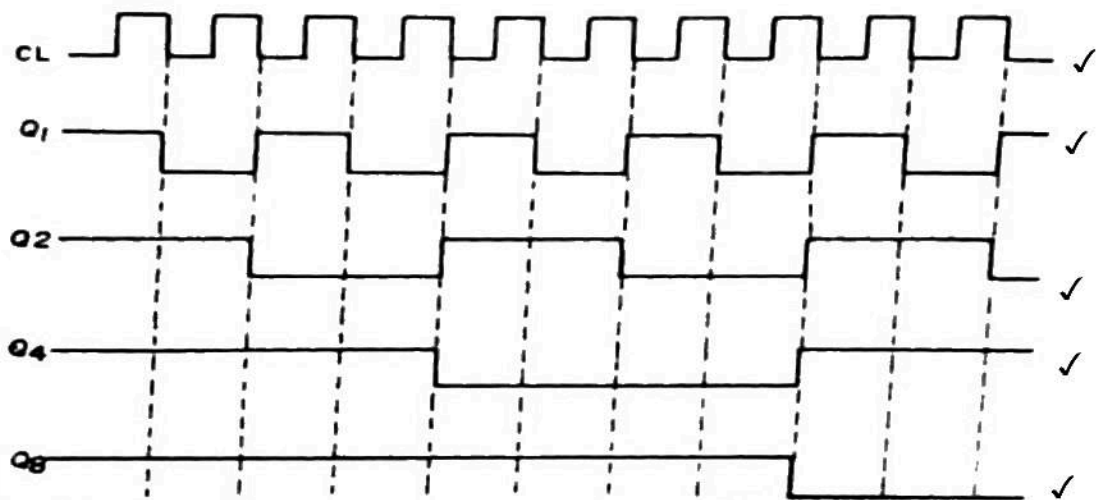
4.1

Klokpuls	Q ₈	Q ₄	Q ₂	Q ₁
0	1	1	1	1
1	1	1	1	0
2	1	1	0	1
3	1	1	0	0
4	1	0	1	1
5	1	0	1	0
6	1	0	0	1
7	1	0	0	0
8	0	1	1	1
9	0	1	1	0
10	0	1	0	1
11	0	1	0	0
12	0	0	1	1
13	0	0	1	0
14	0	0	0	1
15	0	0	0	0
16	1	1	1	1

✓✓✓✓✓

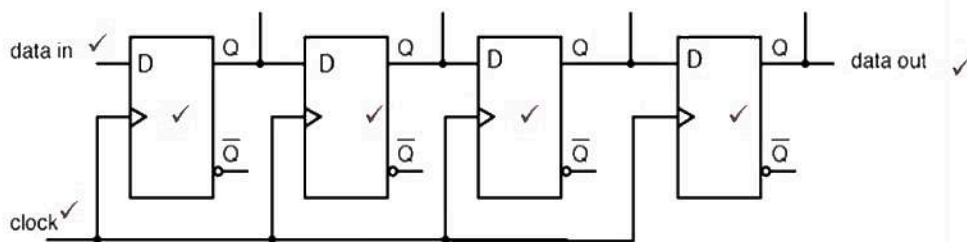
(5)

4.2



(5)

4.3



(7)

4.4

Sinchrone tellers ✓ omdat die uitvoer van die eerste wipkring 'n klok van die volgende wipkring is. ✓✓

(2)

4.5	4.5.1	Waar✓
	4.5.2	Onwaar✓
	4.5.3	Waar✓
	4.5.4	Onwaar✓
	4.5.5	Waar✓

(5 × 1) (5)
[25]

TOTAAL: 100