



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

LOGIC SYSTEMS N5

7 August 2026

This marking guideline consists of 7 pages.

QUESTION 1

A	B	C	JA	KA	JB	KB	JC	KC
0	0	0	0	∅	0	∅	1	∅
0	0	1	0	∅	1	∅	∅	1
0	1	0	0	∅	∅	0	1	∅
0	1	1	1	∅	∅	1	∅	1
1	0	0	∅	0	0	∅	1	∅
1	0	1	∅	1	0	∅	∅	1
1	1	0	∅	1	∅	1	0	∅
1	1	1	∅	1	∅	1	∅	1

$Q_n \rightarrow Q_{n+1}$	J	K
$0 \rightarrow 0$	0	∅
$0 \rightarrow 1$	1	∅
$1 \rightarrow 0$	∅	1
$1 \rightarrow 1$	∅	0

JA	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	0	∅	∅
c	1	0	1	∅

JA = BC

KA	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	∅	∅	1
c	1	∅	∅	1

KA = B + C

JB	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	0	∅	0
c	1	1	∅	0

JB = /AC

KB	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	∅	0	1
c	1	∅	1	1

KB = A + C

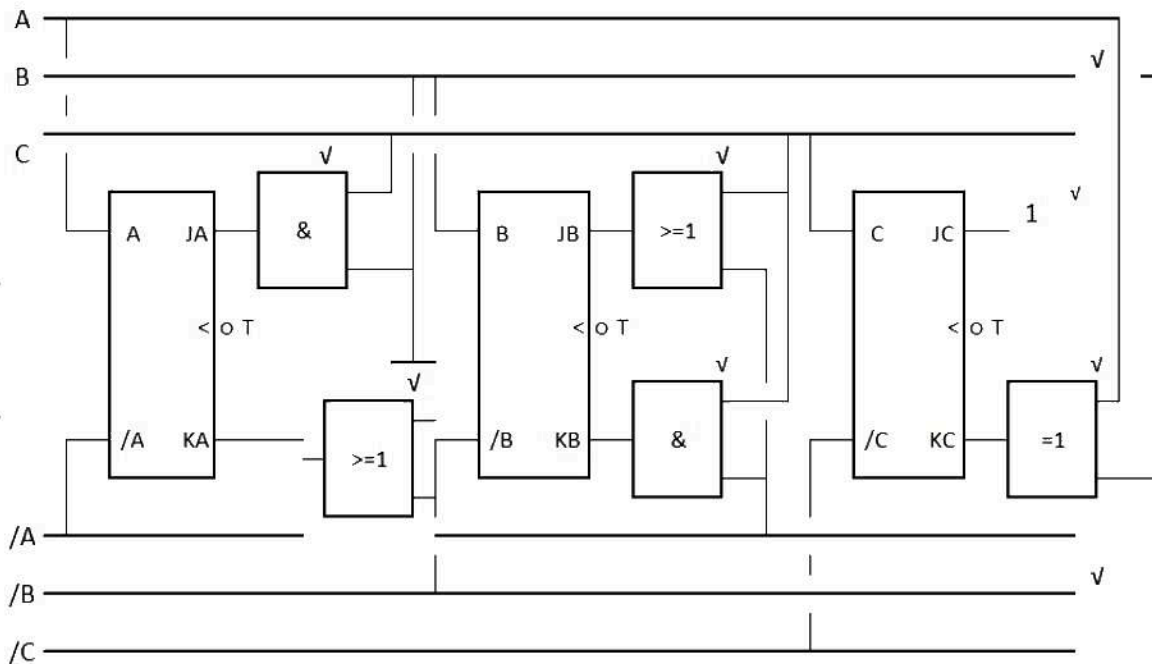
JC	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	1	1	0
c	1	∅	∅	∅

JC = A + B

KC	A/B	A/B	AB	A/B
	00	01	11	10
/c	0	∅	∅	∅
c	1	1	1	1

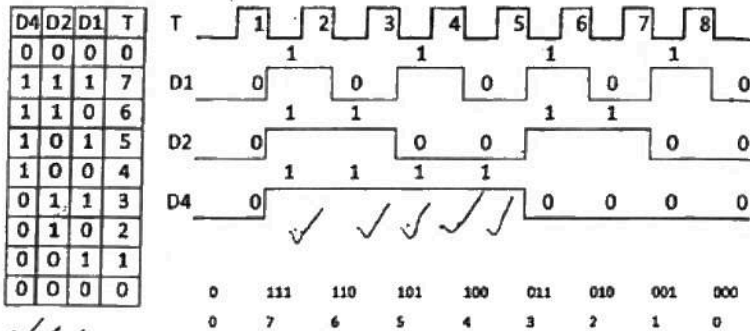
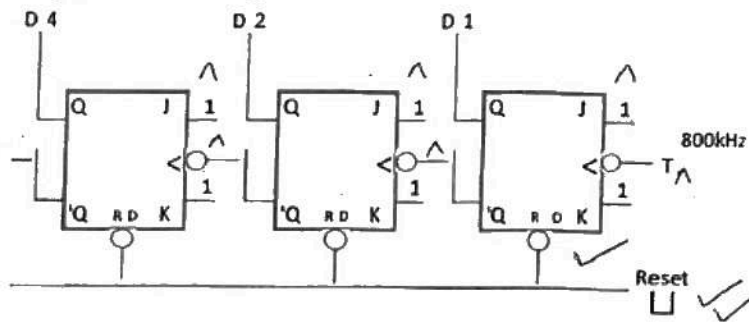
KC = 1

^ = 1/2 mark
(7)



(8)

QUESTION 2



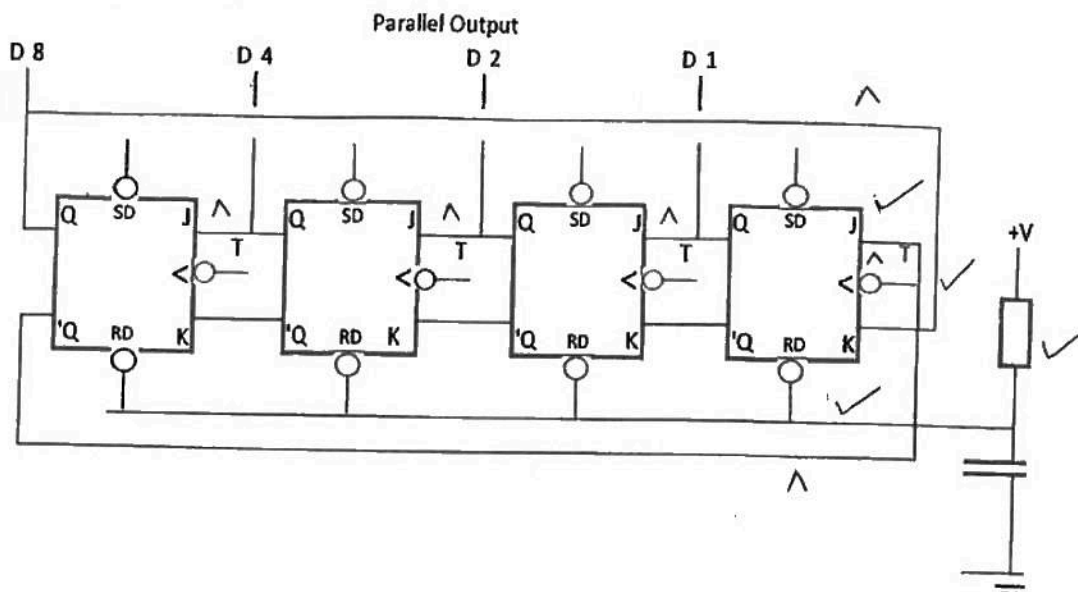
[15]

QUESTION 3

3.1 0001₂ and 1000₂

(2)

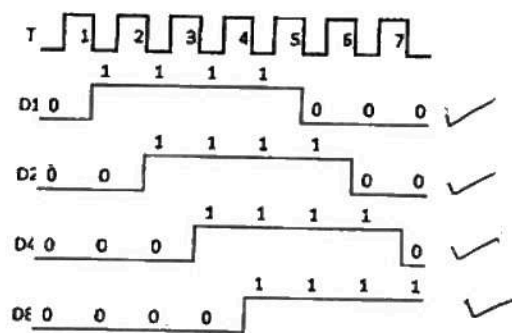
3.2



3.3

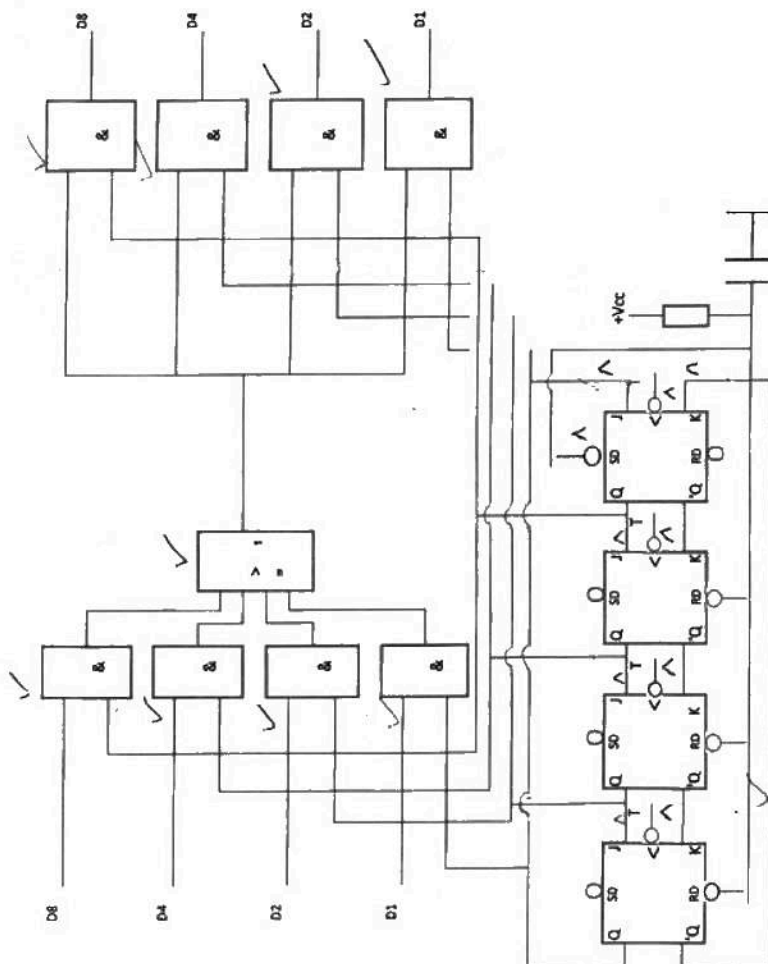
D8	D4	D2	D1	T
0	0	0	0	0
0	0	0	1	1
0	0	1	1	2
0	1	1	1	3
1	1	1	1	4
1	1	1	0	5
1	1	0	0	6
1	0	0	0	7

✓



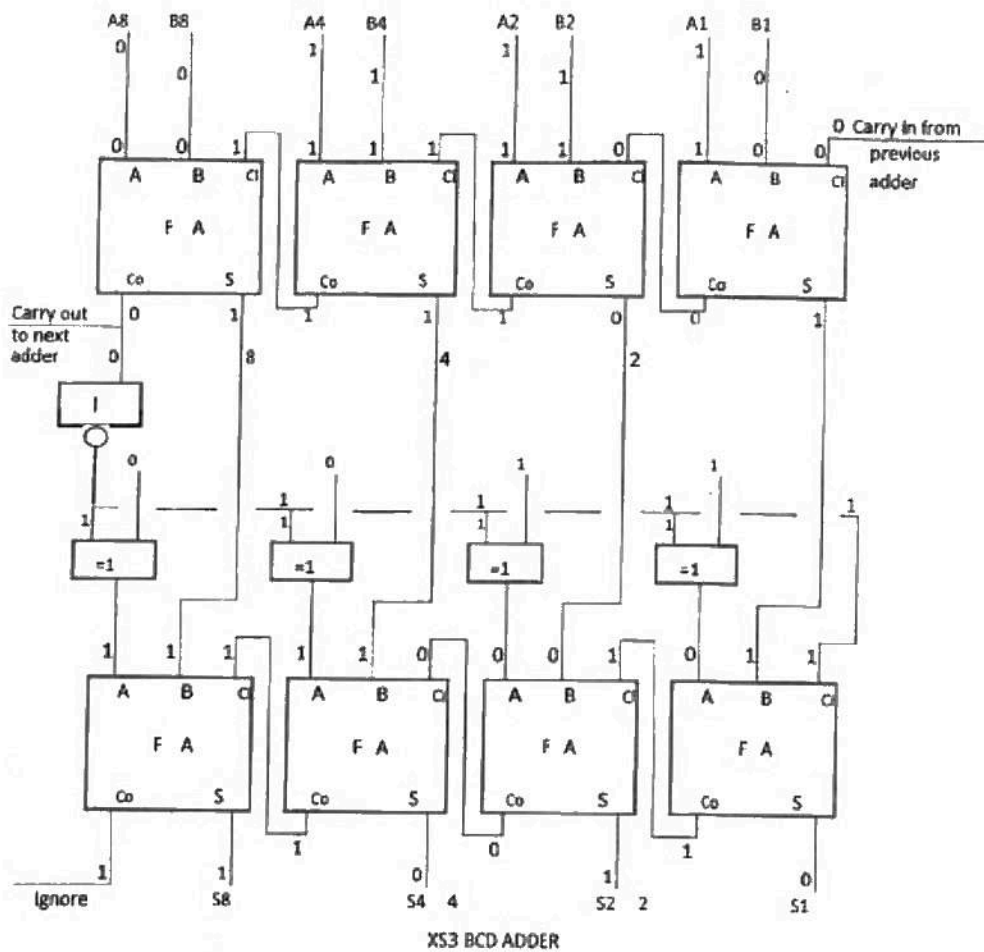
(6)
[15]

QUESTION 4



[10]

QUESTION 5



½ marks for all correct logic 1s and 0s inputs as well as outputs
 1 mark for the exclusive OR gates and correct inputs
 1 mark for Sum

[15]

QUESTION 6

- 6.1 6.1.1 Flash memory may be considered as a development of EEPROM technology. Data can be written to it, and it can be erased but can be read on an individual cell basis. To erase and re-program areas of the chip, programming voltages at levels that are available within electronics equipment are used. It is a no-volatile, and this makes it particularly useful. ✓✓✓
- 6.1.2 Magnetic core memory is an early form of random access computer memory. It uses tiny magnetic rings, the cores, through which wires are threaded to store information via the polarity of their magnetic field. ✓✓✓

- 6.1.3 Magnetic disc memory is the primary computer storage device. It is magnetically recorded and can be re-recorded over and over. Discs are rotating platters with a mechanical arm that moves a read/write head between the outer and inner edges of the platter's surface.✓✓✓

(3 × 3) (9)

- 6.2
- Capacity: representing the global volume of information (in bits) that the memory can store.✓✓
 - Throughput: defining the volume of information exchanged per unit of time, expressed in bits per second.✓✓
 - Access time: corresponding to the time interval between the read/write request and the availability of the data.✓✓

(3 × 2) (6)

[15]

QUESTION 7

- 7.1 A non-impact printer is a type of printer that prints text or images on paper without physically striking the paper. Instead, it uses technologies such as ink spraying, heat or laser beams to produce output.✓✓

Examples include:

- Inkjet printers✓
- Laser printers✓
- Thermal printers

(Any 2 × 1)
(2 × 2)

(4)

- 7.2 Advantages:

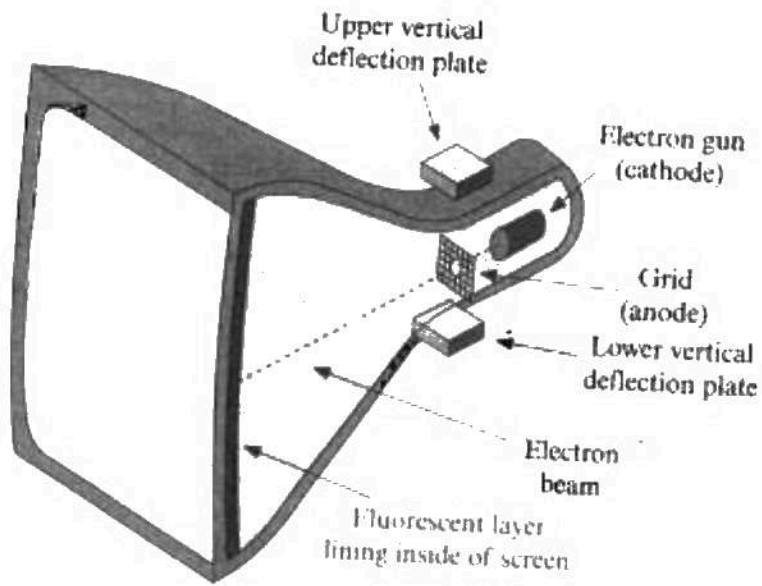
- They operate quietly during printing.
- They produce high-quality text and images.
- They print faster than many impact printers.
- They can print graphics, colours and photographs clearly.
- They require less mechanical movement, reducing wear and tear.
- They are more efficient and reliable for modern office use. (Any 3 × 1)

Disadvantages:

- They are generally more expensive than impact printers.
- Ink, toner, and maintenance costs can be high.
- Consume more power.
- Ink cartridges or toner may dry out or need frequent replacement.
- They can be sensitive to dust and power fluctuations. (Any 3 × 2)

(3 × 2) (6)

7.3



1 × mark for each correct label (5)
[15]

TOTAL: 100