



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

**NATIONAL CERTIFICATE
DIGITAL ELECTRONICS N5**

19 November 2020

This marking guideline consists of 7 pages.

1.3 $122,3_8 = 001\ 010\ 010,011_2$
 $= 1010010,011_2 \checkmark$

$122,16_{16} = 0001\ 0010\ 0010,1011_2$
 $= 100100010,1011_2$
 $= 100100010,101_2 \checkmark$

$\therefore 122,3_8 - 122,16_{16} = 1010010,011_2 - 100100010,101_2$

$001010010,011$
 $100100010,101 \rightarrow 011011101,010 + 1$
 No Carry

$$\begin{array}{r} 001010010,011 \\ 011011101,011 \checkmark \\ \hline 100101111,110 \end{array}$$

\therefore the answer is negative, complement the answer

$$\begin{array}{r} 011010000,001 \\ + 1 \checkmark \\ \hline -011010000,010 \end{array}$$

$\therefore 1010010,011_2 - 100100010,101_2 = -11010000,010_2 \checkmark$
 $= -208,25_{10} \checkmark$

(6)
[18]

QUESTION 2

| A | B | C | D | J _A | K _A | J _B | K _B | J _C | K _C | J _D | K _D | |
|---|---|---|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| 0 | 0 | 0 | 0 | 0 | X | 0 | X | 0 | X | 1 | 1 | ✓ |
| 0 | 0 | 0 | 1 | 0 | X | 0 | X | 1 | X | X | X | ✓ |
| 0 | 0 | 1 | 0 | 0 | X | 0 | X | X | 0 | 1 | 1 | ✓ |
| 0 | 0 | 1 | 1 | 0 | X | 1 | X | X | 1 | X | X | ✓ |
| 0 | 1 | 0 | 0 | 0 | X | X | 0 | 0 | X | 1 | 1 | ✓ |
| 0 | 1 | 0 | 1 | 0 | X | X | 0 | 1 | X | X | X | ✓ |
| 0 | 1 | 1 | 0 | 0 | X | X | 0 | X | 0 | 1 | 1 | ✓ |
| 0 | 1 | 1 | 1 | 1 | X | X | 1 | X | 1 | X | X | ✓ |
| 1 | 0 | 0 | 0 | X | 0 | 0 | X | 0 | X | 1 | 1 | ✓ |
| 1 | 0 | 0 | 1 | X | 1 | 0 | X | 0 | X | X | X | ✓ |

1010
1011
1100
1101
1110

Don't cares (X's) ✓

(10)