



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE DIGITAL ELECTRONICS N5

15 April 2021

This marking guideline consists of 9 pages.

QUESTION 1

1.1 $11,2_8 = 001\ 001,010$
 $= 1001,01_2 \checkmark$

$10,2_{10} = 1010,001_2 \checkmark$

$\therefore 11,2_8 \times 10,2_{10} = 1001,01_2 \times 1010,001_2$

$$\begin{array}{r}
 100101 \\
 1010001 \checkmark \\
 \hline
 100101 \\
 1001010000 \\
 100101000000 \checkmark \\
 \hline
 101110110101
 \end{array}$$

$\therefore 11,2_8 \times 10,2_{10} = 1001,01_2 \times 1010,001_2$
 $= 1011101,10101_2 \checkmark$
 $= 5D,A_{16} \checkmark$

(Final answer: 1 × 1 for correct answer and 1 × 1 for correct radix. BOTH MUST BE THERE, i.e. TWO marks or nothing.) (6)

1.2 $00010111,1001 \xrightarrow{\hspace{10em}}$ $00010111,1001$
 $10100010,0011 \xrightarrow{\hspace{10em}}$ $01011101,1100+1 \checkmark \xrightarrow{\hspace{10em}}$ $01011101,1101 \checkmark$
 No carry
 Complement answer
 And add '1' to LSB

$$\begin{array}{r}
 00010111,1001 \\
 01011101,1101 \checkmark \\
 \hline
 01110101,0110 \\
 -10001010,1001 \checkmark \\
 \hline
 -10001010,1001 \\
 +1 \checkmark \\
 \hline
 10001010,101
 \end{array}$$

$10111,1001 - 10100010,001 = 10001010,1011 \checkmark = 138,628_{10} \checkmark$
 $-138,625_{10}$

(6)

