



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

**NATIONAL CERTIFICATE
DIGITAL ELECTRONICS N5**

11 February 2022

This marking guideline consists of 7 pages.

INSTRUCTIONS TO MARKERS

1. Mark all the questions.
 2. Follow the answers according to the numbering system used in this question paper.
 3. Calculation processes and calculated answers must be given in THREE fractional radix spaces, for example 10, 101₂.
 4. Use only a red pen.
 5. Make your ticks and crosses neatly and legibly.
-

QUESTION 1

- 1.1 A
- 1.2 D
- 1.3 C
- 1.4 C
- 1.5 D
- 1.6 C
- 1.7 B
- 1.8 C
- 1.9 A
- 1.10 B

(10 × 1) [10]

QUESTION 2

- 2.1 DD, E₁₆ = 1 1 0 1 1 1 0 1, 1 1 1 0₂ ✓
 B = 17, 5₁₀ = 1 0 0 0 1, 1₂ ✓
 6, 5₈ = 1 1 0, 1 0 1₂ ✓

(3)

2.2

$$\begin{array}{r}
 1\ 1\ 0\ 1\ 1\ 1\ 0\ 1\ 1\ 1\ 1 \\
 1\ 0\ 0\ 0\ 1\ 1 \times \\
 \hline
 1\ 1\ 0\ 1\ 1\ 1\ 0\ 1\ 1\ 1\ 1 \\
 1\ 1\ 0\ 1\ 1\ 1\ 0\ 1\ 1\ 1\ 1 \quad \checkmark\checkmark \\
 \hline
 1\ 1\ 0\ 1\ 1\ 1\ 0\ 1\ 1\ 1\ 1 \quad + \\
 1\ 1\ 1\ 1\ 0\ 0\ 1\ 0\ 1\ 0\ 1\ 0\ 1\ 1\ 0\ 1 \quad \checkmark
 \end{array}$$

Answer: 1 1 1 1 0 0 1 0 1 0 1 0, 1 1 0₂ = 7452, 64₈ ✓ (4)

2.3

$$\begin{array}{r}
 1\ 0\ 0\ 0\ 0\ 1, 0\ 1\ 1 \quad \checkmark\checkmark \\
 \hline
 1\ 1\ 0\ 1\ 0\ 1\ 1\ 1\ 0\ 1\ 1\ 1\ 1, 0\ 0\ 0 \\
 \hline
 1\ 1\ 0\ 1\ 0\ 1 \quad - \\
 \hline
 1\ 0\ 0\ 1\ 1\ 1\ 1 \quad \checkmark \\
 \hline
 1\ 1\ 0\ 1\ 0\ 1 \quad - \\
 \hline
 1\ 1\ 0\ 1\ 0\ 0\ 0 \\
 \hline
 1\ 1\ 0\ 1\ 0\ 1 \\
 \hline
 1\ 1\ 0\ 0\ 1\ 1\ 1 \quad \checkmark \\
 \hline
 1\ 1\ 0\ 1\ 0\ 1 \quad - \\
 \hline
 1\ 1\ 0\ 0\ 1\ 0
 \end{array}$$

1 0 0 0 0 1, 0 1₂ = 33, 375₁₀ ✓ (5)

2.4

$$\begin{array}{r}
 0\ 0\ 0\ 1\ 0\ 0\ 0\ 1, 1\ 0\ 0 \\
 \hline
 1\ 1\ 0\ 1\ 1\ 1\ 0\ 1, 1\ 1\ 1 \quad - \quad \checkmark \\
 \hline
 \xrightarrow{\frac{2}{C}} 0\ 0\ 1\ 0\ 0\ 0\ 1\ 0, 0\ 0\ 1 \quad \checkmark \\
 \hline
 0\ 0\ 0\ 1\ 0\ 0\ 0\ 1, 1\ 0\ 0 \quad + \\
 \hline
 \text{No carry} \quad 0\ 0\ 1\ 1\ 0\ 0\ 1\ 1, 1\ 0\ 1 \quad \checkmark \\
 \hline
 \xrightarrow{\frac{2}{C}} 1\ 1\ 0\ 0\ 1\ 1\ 0\ 0, 0\ 1\ 1 \quad \checkmark
 \end{array}$$

Answer: 1 1 0 0 1 1 0 0, 0 1₂ = CC, 6₁₆ ✓ (5)

[17]