

## GENERAL EDUCATION AND TRAINING CERTIFICATE

## NQF LEVEL 1

## ABET LEVEL 4 SITE-BASED ASSESSMENT

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| **LEARNING AREA** | **:** | **MATHEMATICS AND**  **MATHEMATICAL SCIENCES** |
| **CODE** | **:** | **MMSC4** |
| **TASK** | **:** | **TEST** |
| **TIME** | **:** | **2 HOURS** |
| **MARKS** | **:** | **50** |

**This assessment task consists of 5 pages**.

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| INSTRUCTIONS AND INFORMATION |  |  |

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| 1. | Answer ALL the questions in the ANSWER BOOK. |  |  |

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| 2. | Calculators may be used, but you must show ALL calculations. |  |  |

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| 3. | Read the questions carefully before you write down the answers. |  |  |

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| 4. | Write legibly and present your work clearly. |  |  |

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| 5. | Number the answers correctly and clearly in accordance with the numbering system used in this question paper. |  |  |

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| **QUESTION 1** |  |  |

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| 1.1 | Given the following number pattern: −2 ; 3 ; 8 ; 13 ; *a* ; *b*... |  |  |

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|  | 1.1.1 | What are the values of *a* and *b* if the number pattern is consistent? |  | (2) |

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|  | 1.1.2 | Describe the pattern in your own words. |  | (2) |

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|  | 1.1.3 | Determine the tenth term in the sequence. |  | (2) |

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|  | 1.1.4 | Will 45 be a term in this pattern? Motivate your answer. |  | (2) |

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| 1.2 | Consider the following geometric pattern:  • • • •  • • • • • • •  • • • • • • • • •  • • • • • • • • • • \_\_\_\_\_\_\_\_\_  A B C D E |  |  |

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|  | 1.2.1 | Extend the pattern by drawing the arrangement for E. |  | (2) |

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|  | 1.2.2 | How many dots will arrangement G have? |  | (1) |

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|  | 1.2.3 | Explain how this pattern is formed. |  | (2) |

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|  | 1.2.4 | Will an arrangement of 200 dots be part of this pattern? Give a reason for your answer. |  | (2) |

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| **QUESTION 2** |  |  |

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| The graph given below represents the conversion between centimetres and inches.  **Y**  5  0  10  20  15  25  30  35  40  45  2  4  6  8  **X**  10  25  20  18  16  14  12  Centimetres (cm)  Inches |  |  |

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| 2.1 | Redraw and complete the following table using the above graph.   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Inches | 2 |  | 8 | 10 | 14 |  | | Centimetres | 5 | 10 |  | 25 |  | 45 | |  | (4) |

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| 2.2 | Use the graph to find the diameter, in inches, of a pipe that is 40 cm wide. |  | (1) |

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| 2.3 | Use the graph to find the length, in cm, of a spanner that is 12 inches long. |  | (1) |

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| 2.4 | Write down a formula for the conversion of inches into centimetres in the form of *y = kx*, where *y* represents the measurements in inches, *x* represents the measurements in centimetres and *k* is a constant. |  | (2) |

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| 2.5 | Use the formula generated in QUESTION 2.4 to calculate the length, in centimetres, of a steel rod that is 60 inches long. |  | (2) |

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| **QUESTION 3** |  |  |

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| 3.1 | Simplify the following expressions: |  |  |

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|  | 3.1.1 | *5pq² – 2pq + pq² – pq* |  | (2) |

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|  | 3.1.2 | 3(*x* – 2*y*) + 2(4*x* + 3*y*) |  | (3) |

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| 3.2 | Subtract 3*y* – 4*z* from 5*y* – 6*z*. |  | (3) |

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| 3.3 | Solve for x if: 6*x* – 5 = 2*x* + 31 |  | (3) |

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| 3.4 | Factorise the following expressions completely: |  |  |

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|  | 3.4.1 | 3*m*(*m* + *n*) – 2(*m* + *n*) |  | (2) |

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|  | 3.4.2 | *x*2 – 5*x* – 24 |  | (2) |

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| 3.5 | Mpho takes her secret number and subtract 7 from it. She then multiplies the answer by 15. This gives her an answer of 75. What is her secret number?  HINT: Let her secret number be *x*. |  | (5) |

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| **QUESTION 4** |  |  |

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| The diagram on the left below shows a side view of one of the pylons of the iconic Mandela Bridge in Johannesburg as adapted from the picture on the right. Use the diagram to answer the questions that follow.  Source: [www.google.co.za/mandela](http://www.google.co.za/mandela) bridge  pylon  cables  road |  |  |

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| 4.1 | Name the geometric shape that is formed between the pylon, the road and a cable. |  | (1) |

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| 4.2 | What is the size of the angle between the pylon and the road? |  | (1) |

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| 4.3 | Choose the correct word(s) from those between brackets. Write only the question number with the correct word(s) in your Answer Book. |  |  |

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|  | 4.3.1 | The pylon is (adjacent / perpendicular) to the road. |  | (1) |

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|  | 4.3.2 | There are (exactly 16 / more than 16 / less than 16) right-angled triangles in the diagram. |  | (1) |

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| 4.4 | What is the role of the cables between the pylons and the road? |  | (1) |

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| TOTAL: |  | **50** |