

## 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** | **:** | **PROJECT** |
| **TIME** | **:** | **3 WEEKS** |
| **MARKS** | **:** | **50** |

**This assessment task consists of 5 pages and an Annexure of 3 pages**.

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| INSTRUCTIONS AND INFORMATION |  |  |

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| 1. | Answer all the questions contained in the activities on this QUESTION PAPER. Hand in PAGES 3 – 5 as well as the models built with the nets in the Annexure. |  |  |

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| 2. | Use the nets on the Annexure to make the models for ACTIVITY 2. This must be handed in together with answers to the activities. |  |  |

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| 3. | WRITE YOUR CENTRE AND NAME IN THE SPACES PROVIDED. |  |  |

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| 4. | Read the questions carefully before you write down the answers. |  |  |

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| 5. | Write neatly and legibly using blue or black ink and present your work clearly. |  |  |

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| 6. | Follow the additional INSTRUCTIONS given at each activity. |  |  |

**CENTRE**:…………………………………… **NAME**: …………………………………………..

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| ACTIVITY 1 |  |  |

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| Study the pattern on the Cartesian plane below and answer the questions that follow.  0  y  x  1  2  3  4  -1  5  1  2  3  4  -3  -4  -2  -5  -1  -2  -3  -4 |

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| 1.1 | Name the different shapes in the pattern.  …………………………………………………………………………………………. |  | (4) |

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| 1.2 | Use the diagram and draw in the reflection of the pattern about the y-axis. |  | (4) |

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| 1.3 | On the same diagram, draw in the rotation of the pattern through 180° about the origin. |  | (4) |

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| 1.4 | Describe the transformation from the image after the reflection in  QUESTION 1.2 to the image after the rotation in QUESTION 1.3.  ………………………………………………………………………………………..  ……………………………………………………………………………………….. |  | (2) |

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| ACTIVITY 2 |  |  |

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| In this activity we will use **regular polygons** to construct 3-dimensional objects called polyhedra.  There are only 5 regular polyhedra called the *Platonic solids*. |  |  |

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| 2.1 | What is meant by a regular polygon?  …………………………………………………………………………………………  ………………………………………………………………………………………… |  | (1) |

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| 2.2 | Use the nets of the 5 *Platonic solids* in the Annexure to construct the polyhedra using the following information: |  |  |

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|  | 2.2.1 | Colour in/ draw a pattern on the net. |  |  |

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|  | 2.2.2 | Write your (group)name on one side. |  |  |

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|  | 2.2.3 | Cut out along the outline of the nets. |  |  |

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|  | 2.2.4 | Fold along the dotted lines. |  |  |

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|  | 2.2.5 | Glue the flaps and paste it together to form the *Platonic solids*. |  |  |

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|  | 2.2.6 | Use your models to complete the table in QUESTION 2.3. |  |  |

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|  | 2.2.7 | **THE PROJECT MUST BE HANDED IN ON**:……………………….. |  |  |

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| The following rubric will be used to assess the models:   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **CRITERIA** | **DESCRIPTORS** | | | | | | | | | | | | | **MARK** | | **Following of instructions** | Name included | Completed Models handed in | | | | | | | Table completed | | Neatness | | | **8**  **5** | | **1** | **5** | | **2-4** | | **1** | **None** | | **1** | | **Neat** | | **Sloppy** | | **4** | | **3** | | **1** | **0** | | **2** | | **1** | | **Presentation and Punctuality** | **COLOUR AND CREATIVITY** | | | | | | | **PUNCTUALITY** | | | | | | | Colourful/ Different patterns | | Some effort to use colour/ patterns | | Dull/  one colour/  pattern | | | Handed in on time | | 1 - 2 days late | | More than 2 days late | | | **3** | | **2** | | **1** | | | **2** | | **1** | | **Task total halved** | | | **TOTAL MARK** | | | | | | | | | | | | | |  | |  | (13) |

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| 2.3 | Polyhedra have faces, edges and vertices.  The following notations must be used in completing the table:  Face  Vertex/  Corner  Edge |  |  |

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|  | 2.3.1 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **3 D model** | **Shape of faces** | **Number of faces (F)** | **Number of edges (E)** | **Number of vertices/**  **corners (V)** | | **Tetrahedron** |  |  |  |  | | **Cube** |  |  |  |  | | **Octahedron** |  |  |  |  | | **Dodecahedron** |  |  |  |  | | **Icosahedron** |  |  |  |  |   (20) |

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|  | 2.3.2 | Can you find a relationship between the number of faces (F), edges (E) and the vertices (V) of the polyhedra? Write it down.  …………………………………………………………………………….  …………………………………………………………………………….. |  | (2) |

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| TOTAL: |  | **50** |

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| ANNEXURE: |  |  |

CUBE

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| TETRAHEDRON  OCTAHEDRON |

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| --- |
| DODECAHEDRON |

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| *Source: Platonic solids adapted from MALATI CD, University of Stellenbosch*  ICOSAHEDRON |