

## **GENERAL EDUCATION AND TRAINING CERTIFICATE**

## **NQF LEVEL 1**

## **AET LEVEL 4 SITE-BASED ASSESSMENT**

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| **LEARNING AREA** | **:** | **MATHEMATICS AND MATHEMATICAL SCIENCES** |
| **CODE** | **:** | **MMSC4** |
| **TASK** | **:** | **PROJECT** |
| **DURATION** | **:** | **3 WEEKS** |
| **MARKS** | **:** | **50** |

**This assessment task consists of 8 pages and 1 annexure.**

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| **INSTRUCTIONS AND INFORMATION** |  |  |

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| 1. | Read questions carefully, and do thorough planning before you start with the project. |  |  |

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| 2. | Indicate units of measurement where applicable. |  |  |

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| 3. | Follow the additional INSTRUCTIONS given for each activity. |  |  |

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| 4. | You may use an approved calculator. Round off ALL the final answers to TWO decimal places unless stated otherwise. |  |  |

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| 5. | You will need the following resources for this project:   * Pencil * Calculator * Ruler |  |  |

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| **ACTIVITY 1** |

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| 1.1 | Look at this plan of a house: |  |  |

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|  | 1.1.1 | Measure carefully with a ruler on the house plan and complete the following table. [Scale: on the plan represent of the actual distance on the ground] |  |  |

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|  | Distance on plan 1 cm (10 mm) | Actual distance 100 cm (1 m) |
| Kitchen Tile floor: Length |  |  |
| Kitchen Tile floor: Breadth |  |  |
| Bedroom 2: Length |  |  |
| Bedroom 2: Breadth |  |  |
| Width of the inside doors |  |  |
| Length of the kitchen window |  |  |

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|  |  | (6) |

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|  | 1.1.2 | Name the shape of bedroom 2. |  | (1) |

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|  | 1.1.3 | Why do you think the door is represented with a curve? |  | (1) |

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|  | 1.1.4 | What is the perimeter of the bedroom 2? |  | (2) |

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|  | 1.1.5 | Calculate the combined area of the Kitchen and Living Room tile floors |  | (2) |

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|  | 1.1.6 | Calculate the cost of the tiles in the Kitchen and Living Room if the tiles cost per square metre? |  | (2) |

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|  | 1.1.7 | How many floor tiles of by each would be needed to cover the kitchen and living room tile floor areas (do not take any fittings into account)? |  | (2) |

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| 1.2 | The picture of a circle with a diameter of .Determine the area of the analogue time clock. Answer correct to 2 decimal place and.  https://math.microsoft.com/images/0/12658  **Analogue time** is measured using two 12 hours sections (a.m. and p.m.) |  | (2) |

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| 1.3 | What is the analogue time on this shown clock?  https://math.microsoft.com/images/0/12660  . |  | (1) |

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| 1.4 | Give the analogue or the digital time for each of the following: |  |  |

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|  | (a) |  |  |  |

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|  | (b) |  |  |  |

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|  | (c) | Ten to five in the afternoon.  (3 x 1) |  | (3)  **[22]** |

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| **ACTIVITY 2** |

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| **Surface Area Formulas**  The surface area of a shape is the sum of the area of all the shapes that cover the surface of the object.   |  | | --- | | **Surface Area of a Cube = 6*a* 2** where *a* is the length of each side of the cube |   **1**  **2**  **3**  **6**  **5**  **4**  The net of the cube  *a*  *a*  *a*  The surface area of a cube is the sum of the areas of the six sides of the cube.  Each side of the cube is a square. A cube has 6 equal squares  Area of one square:  Therefore: Area of cube =   |  | | --- | | **Surface Area of a Rectangular Prism = 2*lb* + 2*bh* + 2*lh*** where *l* = length; *b* = breadth and *h* = height |   *l*  *b*  *h*  The surface area = **2*lb* + 2*bh* + 2*lh*** |  |  |

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| http://www.mathatube.com/sitebuilder/images/r-p-00-210x75.jpgExample: Find the surface area of this rectangular prism.  The surface area = **2*lb* + 2*bh* + 2*lh***  = 2(10 x 5) + 2(5 x 7) + 2(10 x 7)  = 2 (50) + 2(35) + 2 (70)  = 100 + 70 + 140  = 310  Area is always given as a square measure (.)   |  | | --- | | **Volume =**  where *l* = length; *b* = breadth and *h* = height |   **The volume of any regular prism is always: Area of base x height**  **http://www.mathatube.com/sitebuilder/images/r-p-00-210x75.jpgExample:** Find the volume of this rectangular prism.  Multiply the length (*l )*by the breadth (*b*) by the height (*h*).  Volume = 10 cm x 5 cm x 7 cm  = 350 cm3  Volume is always given as a cubic measure (.) |  |  |

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| 2.1 | The owner of a computer storage building wants to install air-conditioning. The size of the air conditioner depends on the capacity of the building. Below is a diagram with the dimensions of the building. The diagram is not drawn to scale.  NOTE: The building consists out of a rectangular prism and a triangular prism. |  |  |

edge

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| **[http://kramerkonstruction.com/pics/example025.jpg](https://www.google.co.za/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCNabkaPMuMcCFema2wodOwMJdQ&url=https://s3.amazonaws.com/PDFPlans/storage-building-plans-30x40.html&ei=ZUXWVZbVD-m17ga7hqSoBw&psig=AFQjCNGxuGL6YQvIBxl8IW5blPZpQFBFmA&ust=1440192209348077)**  **3m**  **10 m**  **5m**  **8 m** |  |  |

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|  | 2.1.1 | Name TWO polyhedrons that make out the building. (2 x 1) |  | (2) |

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|  | 2.1.2 | Calculate the volume of the whole building including the roof. |  | (4) |

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|  | 2.1.3 | Calculate the length of side named edge on the picture. |  | (3) |

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|  | 2.1.4 | Calculate the total surface of the outside of the building including the roof. |  | (4) |

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| 2.2 | As shown in the diagrams below a rectangular block (FIGURE A) has been sliced produce a polyhedron (FIGURE B) with rectangular face. Study FIGURE A on the left and Figure B on the right in order to answer and do the activities that follow.  *page-13,-figure-1* |  |  |
|  | **FIGURE A FIGURE B** |  |  |

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|  | Slice along the dotted lines to form this polyhedron (right) |  |  |

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|  | 2.2.1 | Draw a net for the rectangular block (FIGURE A) before it was sliced. |  | (3) |

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|  | 2.2.2 | How many faces, vertices and edges does the sliced polyhedron (FIGURE B) have? |  | (3) |

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|  | 2.2.3 | a) | In ANNEXURE A you are given a rectangular block in FIGURE C. Make dotted lines to mark off how you would slice the rectangular blocking FIGURE C so that a face of the sliced rectangular block is a pentagon. |  |  |

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|  |  | b) | After slicing of the marked piece, draw alongside figure C, the new polyhedron with the pentagonal face. Label this new sliced polyhedron FIGURE D. |  |  |
|  |  |  | (2 x 1) |  | (2) |

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|  | 2.2.4 | Copy and complete the following table with respect to FIGURES A, B and D.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **FIGURES** | **TYPES** | **FACES (F)** | **VERTICES(V)** | **EDGES(E)** | | A | Rectangular block |  |  |  | | B | Sliced polyhedron with a rectangular face |  |  |  | | D | Sliced polyhedron with pentagonal face |  |  |  |   There is a special relationship among the number of vertices (V), faces (F) and edges (E). Look for patterns in your completed table and then write relationship you discovered. |  | (7) |
|  |  |  |  | **[28]** |

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| **TOTAL:** |  | **50** |

**ANNEXURE A**

**NAME:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_