MATHEMATICS ASSESSMENT BLUEPRINT

Student Study Guide & Examination Framework

Subject: Mathematics (TCP/ICT) **Grade/Semester:** Grade 8 / Odd Semester

Format: Sub-topics & Learning Indicators Summary

1. Number Patterns (Arithmetic & Geometric Sequences)

- Determine specified terms, missing terms, or negative common differences in arithmetic sequences.
- Calculate terms and common ratios involving fractional or non-consecutive values in geometric sequences.
- Establish general terms, positions of values, and formulate general rules for sequences.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** LOTS, MOTS, HOTS

2. Advanced Number Patterns (Fibonacci & Two-Level Differences)

- Determine subsequent or unknown terms of Fibonacci-type and modified recursive sequences without listing all previous values.
- Utilize first- and second-level differences to complete sequences and determine missing or subsequent terms.
- Analyse sequence patterns to evaluate valid general rules and conclusions.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** LOTS, MOTS, HOTS

3. Exponents and Exponential Rules

- Evaluate exponential expressions involving zero, negative exponents, and multiple combined exponent rules (multiplication, division, and power of a power).
- Simplify multi-step exponential expressions and determine the value of variables in exponential relationships.
- Analyse student solution methods to identify errors and select equivalent expressions using the laws of exponents.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** LOTS, MOTS, HOTS

4. Radicals and Radical Operations

- Simplify radical expressions involving non-perfect squares, sums, differences, and combined operations.
- Perform multiplication and division involving radical expressions and simplify the results.
- Compare and order radical expressions without a calculator, and evaluate mathematically valid approaches to simplification.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** LOTS, MOTS, HOTS

5. Standard Form (Scientific Notation)

- Express very large or very small numbers accurately in standard form.
- Perform calculations including multiplication and operations with numbers expressed in standard form.
- Analyse different methods and identify valid operations or correctly calculated results in scientific notation.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** LOTS, MOTS, HOTS

6. Applications of Mathematics

- Analyse quantitative and contextual situations involving exponents, radicals, standard form, or number patterns.
- Evaluate the most appropriate solution strategies and select conclusions supported by mathematical reasoning.
- Solve multi-step problems and justify the chosen methods.

Question Types: Multiple Choice, Multiple-Choice Complex, Short Answer, Essay | **Cognitive Levels:** MOTS, HOTS