Teacher's Notes

The following is a list of characteristics found in student work that was submitted for this task and assessed at "below level 1". (Samples of student work are not included.)

Degree of achievement can vary widely in student performance that falls below level 1. Consequently, the following list includes characteristics of achievement at various degrees below level 1. Taken together, some or all of the characteristics outlined below may justify assessment at "below level 1". Most of the characteristics noted relate to the criteria specified in the task rubric, but some are more broadly defined.

Knowledge/Understanding

The student:

- omits important details from one or more steps of the procedures;
- omits one or more steps of the procedures;
- writes the steps of the procedures in the wrong order;
- includes irrelevant and/or confusing instructions in the procedures;
- does not provide one or more procedures;
- provides an incomplete list of materials needed for the procedures;
- lists unnecessary materials;
- does not include a list of materials;
- calculates a molar mass inaccurately;
- converts the mass of a substance to an amount, in moles, incorrectly;
- does not determine a stoichiometric ratio from a balanced equation;
- does not apply a stoichiometric ratio in the calculations;
- does not convert solution volumes from milliltres to litres in the calculations;
- does not determine a solution concentration from the amount of solute and the volume of solution;
- misidentifies species present in a precipitate or in a solution;
- confuses one sample with another when calculating ion concentrations;
- uses data of unknown origin in the calculations;
- applies irrelevant concepts in calculating ion concentrations;
- does not calculate ion concentrations.

Inquiry

The student:

- misidentifies reactants and/or products in chemical reactions;
- does not balance the atoms in chemical equations;
- writes incorrect formulas for substances and/or ions in equations;
- omits ionic charges from ionic equations;
- assigns incorrect states to species in equations;
- incorrectly applies the solubility rules in predicting precipitate formation;
- writes equations for reactions that do not occur;
- omits some or all equations for observed reactions;
- misstates the causes of kidney stones in the analysis of the test results;
- draws unjustified and/or misleading conclusions in the analysis of the test results;
- confuses one sample with another in the analysis of the test results;
- does not analyse some or all of the test results.

Communication

The student:

- includes unclear and/or incorrect headings in tables;
- omits headings from tables;
- omits the lines that separate the cells in tables;
- includes incorrect units of measure in tables of quantitative data;
- omits units of measure from tables of quantitative data;
- omits some quantitative data from tables;
- includes unclear and/or incomplete qualitative observations in tables;
- tabulates unnecessary information;
- does not tabulate observations or results;
- writes a report that is not clearly organized into sections;

– presents material in an illogical order in the report;
– omits suitable subheads from the report;
– uses scientific terms inappropriately;
– does not use scientific terms;
– writes chemical names and/or formulas incorrectly throughout the report;
– uses units of measure inconsistently, inappropriately, or not at all in the report;
– writes unclear statements that are difficult or impossible to understand;
– makes contradictory statements;
– makes numerous spelling and typographical errors.

Making Connections

The student:
– omits important information from the summary;
– includes vague, irrelevant, misleading, or erroneous statements in the summary;
– writes a summary that is not consistent with the test results;
– makes recommendations that are unclear or unjustified;
– makes no recommendations;
– does not include a summary in the report.

Comments

The student demonstrates little or no understanding of the task and/or the concepts of qualitative and quantitative analysis. If several components of the task are not completed, or are scored below level 1, then the overall score will be below level 1.

Next Steps

In order to improve his or her performance, the student needs to:
- write complete procedures for the qualitative and quantitative tests in sufficient detail to permit replication;
- list all the materials needed to carry out the procedures;
- complete stoichiometry calculations correctly;
- calculate solution concentrations correctly;
- write balanced equations, including states, for the precipitation reactions;
- provide a well-reasoned analysis of the test results;
- tabulate observations and results clearly;
- write a report that is clearly organized into logical sections;
- use scientific terminology, including chemical names and formulas, correctly;
- include all necessary units of measure;
- edit and proofread the report to eliminate errors and clarify unclear statements;
- include a summary of the testing and the results, with appropriate recommendations to the doctor.