# Project Assessment 1

**Assessment event 2 of 3**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MSL913004 - Plan and conduct laboratory/field work (1)

### Qualification/Course code, name and release number

MSL30118 - Certificate III in Laboratory Skills (1)

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Hamilton Campus

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## Assessment instructions

Table 1 Assessment instructions

|  |  |
| --- | --- |
| Assessment details | Instructions |
| **Instructions for the trainer and assessor** | This is a project based assessment and will be assessing the student on their knowledge and performance of the unit.  This assessment is in 3 parts and includes an Assessment Feedback form:   1. Assignment 2. Laboratory Plan 3. Assessment Checklist   The Project should be distributed to students within the first three weeks of the delivery commencement for submission three weeks prior to the first scheduled Laboratory Assessment Session.  The **Assignment** is short answer responses around the planning process for conducting tasks in the laboratory. The **Laboratory Plan** will require time for students to research and discuss with their team the plan they will put in place in Project Assessment 2.  Any required procedures are provided to the student within this Assessment.  You will need to allocate teams of 2 for this task (note, these teams will be the same for the laboratory task in Project Assessment 2).  Model answers, sample responses or criteria for each question are provided below.  Use these to support your judgement when determining a satisfactory result.  The student’s project must contain the information indicated in this marking guide in order to deem it satisfactory. However, if a student provides information other than indicated below, and in the professional opinion of the assessor it is appropriate and meets the intent of the criteria, it may be considered correct.  The assessment feedback page must be signed by both the student and the assessor so the student displays that they have received, understood and accepted the feedback.  Complete the assessment feedback to the student and ensure you have taken a copy of the assessment prior to it being returned to the student. |
| **About this marking guide** | All tasks and activities must responded to correctly in order to satisfactorily complete this assessment event.  Assessors will need to make a judgement call as to whether each answer/response meets the criteria based upon the:   * Rules of Evidence:   + Validity – does the answer address the assessment question and does the evidence reflect the four dimensions of competency?   + Sufficiency – is the answer sufficient in terms of length and depth?   + Currency – has the work been done so recently as to be current?   + Authenticity – is this work the student’s own authentic work? * Principles of Assessment:   + Fairness – individual student’s needs are considered in the assessment process   + Flexibility – assessment is flexible to the individual student   + Validity – any assessment decision is justified, based on the evidence of performance of the student   + Reliability – evidence presented for assessment is consistently interpreted and assessment results are comparable irrespective of the assessor conducting the assessment * Dimensions of Competency   + Task skills   + Task Management Skills   + Contingency Planning Skills   + Job Role Environment Skills |
| **Student must provide** | Pens and pencils |
| **Assessor must provide** | A copy of this assessment for each student. |
| **Due date and time allowed** | Due 3 weeks prior to the first of the three scheduled laboratory sessions. Time permitted is from issue to due date. |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by you to determine if the student has satisfactorily completed this assessment event.

**Part 1** Assignment is to be completed individually and submitted with the remainder of the Project by the due date.

**Part 2** Laboratory Planning: The student will work to complete the planning for each of the tasks identified in the following brief either individually (Tasks A and B) and as part of a team (Task C). You will place students in a team with another person when this Assessment is distributed.

You should read the brief to ensure you have a clear understanding of what is required. Students are advised if they are uncertain of the task, to speak with their Trainer.

You are required to hand back this Assessment to the student, at the beginning of each practical Assessment session. All paperwork is to be collected at the end of each session

## Part 1: Assignment

You are to provide a response to each of the questions identified below. Your responses should be no more than 200 words for any question or part of a question. You should read all of the questions before commencing your responses.

All responses provided below are indicative (samples) of the answers that may be provided by the student.

1. How would you determine the tasks to be undertaken by you in the laboratory/field over a given day, week and month?

Look at the schedule of tasks that are available.

For each laboratory session the tasks will be allocated. The schedule of tasks is provided at the beginning of each Unit.

In order to plan for the day, week or month it is necessary to refer to the schedule for each different Unit.

1. Complete the following table by identifying four laboratory/field activities you complete routinely. For each activity identify how you clarify the tasks and the resources that would be required to complete the task. Student response can include any tasks here that they have conducted during their laboratory experience, however is not limited to the following sample responses.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Test | Clarification | Resources |
| 1 | Preparing working solutions | Read procedure carefully and check with Trainer | Chemical, purified water, volumetric flask, balance |
| 2 | Cleaning work area | Check with others in the work area that they have completed.  Check SDS and SOP for clean-up procedure | Cloths, sharps container, sanitiser |
| 3 | Washing up glassware | Check SOP | Detergent, scourer, water |
| 4 | Determining pH of sample | Confer with trainer to be clear on the particular method required | Calibrated pH meter, beakers, purified water, buffers |
| 5 | *Preparing stains* | *Which stains are required* | *Chemical, purified water, labelled bottle, balance* |
| 6 | *Disinfecting glassware* | *Is glassware to be sterilised or sanitised* | *Solutions for procedure* |

1. If you are requested to complete all the tasks you identified above on the same day:
2. how would you prioritise the work to ensure you completed as requested and
3. what would the order be?
4. Look at how much time each one takes and if one task depends on another. In the example above the order would most likely be
5. Order provided below is a sample only, using 4 of the items from the table above:
6. Prepare working solutions as this could be the sample to be analysed
7. Determining the pH of samples
8. Washing up the glassware
9. Cleaning work area
10. If you are unable to complete a laboratory/field task in the required time, what steps are you required to follow?
11. Speak with the Trainer and advise where you will be/are up to.
12. Ensure that all work that is left is in a safe and stable state (for example, labelled and left in the fume cupboard)
13. Notify others around you that work has been left
14. Describe a strategy you use in the laboratory/field to identify problems and/or difficulties that may arise while performing tasks.

In a training classroom the problem is often everyone requiring the balance or a microscope at the same time. Planning ahead (by observing if equipment is available) to see if there is something else that could be done while waiting for a particular item of equipment for example getting out and labelling equipment for a subsequent step. Or

If waiting to run an analysis and the instrument is already in use it could be useful to clean your workarea while waiting ie change the work priority

1. Prepare a flow chart of a laboratory/field procedure you have completed. Identify the steps where problems are most likely to occur. For each step identified, indicate what could be done if the problems do occur.

Below is a sample response only.

Preparation of solution by serial dilution for a pH determination.

|  |
| --- |
| Obtain equipment (Vol flask, pipette, beakers, weigh boat, balance) |
| Prepare stock solution balance congestion 1. |
| Initial dilution |
| Second dilution |
| Third dilution |
| pH meter calibration pH determination 2. |

1. Balance congestion: if there is congestion at the balances it would be useful to step straight through to the pH meter calibration and have this done whilst waiting on balances to be freed up.
2. pH meter calibration: if it happens regularly perhaps request another pH meter be resourced.
3. Laboratory or field work will incorporate tasks that will be carried out by:
4. Individuals
5. Laboratory teams
6. Teams involving personnel from other areas (for example WHS, quality or environment)

In the table below, indicate whether the following would **most** likely to be completed by the individual, a laboratory team or other team (identify the team).

|  |  |
| --- | --- |
| Task | Completed by |
| Investigation into electrical incident in the laboratory | WHS team |
| Preparation of 10% NaOH stock solution | Individual |
| Collection of 145 field samples from local water treatment plants | Laboratory team |
| Safety audit of the laboratory | Laboratory team/ WHS team |
| Return glassware from the drying cabinets to storage in the laboratory | Individual |
| Quality audit of the laboratory | Quality team |
| Rewriting a Standard Operating Procedure | Laboratory tea |

1. Identify two tasks or procedures you undertake where you are part of a team. For each task or procedure, identify your strengths and weakness and also the opportunities that exist for you to undertake skill development in that area.

Student response can include any of the following, but is not limited to:

| Task | Performance evaluation  (strengths and weaknesses) | Skill development |
| --- | --- | --- |
| 1. Rostered laboratory cleaning | Have lots of knowledge about one specific area of the laboratory but not all (especially micro area) | Receive training in the particular specifics of different areas such as microbiology area |
| 1. Laboratory monthly audit team | Have lots of knowledge related to the wet laboratory but very little related to the instrument laboratory | Piggy back with someone working in the instrument laboratory to familiarise with the equipment available |
| 1. Equipment calibration team | Good knowledge of instruments trained in but no skill in other instrumentation | Regular training in new equipment |
| 1. Bi-annual Stocktake team | Lots of knowledge of my particular area and the equipment involved.  Little knowledge of other laboratory areas | Bi-annual training in new stocktake procedures |

## Part 2: Laboratory Plan

To complete this part of the assessment, you will be required to read the brief below. This completed assessment will be used in your next Project Assessment 2.

**Brief:**

This part of the Assessment is the planning for the Laboratory Tasks provided in the information that follows. You and your team are required to complete the following sections that are contained within this document:

1. Plan and organise daily work, for Task A and Task B individually and for Task C with your partner
2. Work in a Team environment in the laboratory for Task C
3. Knowledge and skill development completed individually

You are to plan individually, and as part of a team, for the completion of three Tasks over three 2-hour laboratory sessions. The individual and the team tasks are outlined below. Each member of the team must make a contribution to the team task to be deemed competent.

There are procedures provided in the Appendices.

**Task A** (to be completed individually) Determination of the % composition of a sample of sand, salt and sawdust.

**Task B** (individual) monitor and record the temperature of the laboratory water bath (every 45 minutes from the beginning of each session) and complete the control chart provided.

**Task C** (team based) Urgent analysis of four samples for % sugar by refractometer along with quality control check samples of 7.5% and 12.5%. The results must be ready within 45 minutes of arrival at the laboratory during each session. When the samples arrive the team will need to adjust their individual tasks to accommodate completion of the analysis within the required time (45 minutes).

Task A will be commenced in session 1 and may be completed over the following 2 sessions.

Tasks B and C will both be completed in each of sessions 1 and 2, the third session will be available if there was an issue with the completion of Tasks B and C during sessions 1 or 2.

**Task A Determine % composition of a sample of sand, salt and sawdust**

The sample you are given (~50g) will require mixing and sub-sampling down for triplicate analysis of three 5g samples. You should refer to the procedures provided in the Appendices and choose the most appropriate for the completion of Task A.

**Task B Monitoring, recording and completion of control chart**

The task is to monitor the temperature of the laboratory water bath (every 45 minutes, with at least 2 measurements being made in each of two sessions), report the value on the record sheet and also note on the water bath control chart. You should refer to the procedures provided in the Appendices for the most appropriate for the completion of Task B.

**Task C Urgent analysis % sugar**

The sugar solutions are urgent and will be delivered to you in the first two sessions allocated for the task. If there are particular issues the samples will arrive in the third session also. With your team you will have 45 minutes from the time the samples arrive to complete and report the % sugar. For this task the team will also be required to prepare 50 mL each of the three standard sugar solutions (5, 10, 15 % sugar) in each session. The team should refer to the procedures provided in the Appendices and choose the most appropriate for the completion of Task C.

**1. Plan and organise daily work**

a. Refer to the Appendices in this Assessment and note the procedures you will follow to complete each task.

|  |  |
| --- | --- |
| Task | Procedure(s) |
| 1. Determine % composition of a sample of sand, salt and sawdust | Appendix 1: Sample reduction: cone and quartering laboratory sample to analytical sample.  Appendix 2 composition of sample of sand, salt and sawdust |
| 1. Monitoring, recording of temperature and completion of control chart | Appendix 3: Part 3 of M116 Calibration of thermometer, measuring of temperature of sample/equipment |
| 1. Urgent analysis % sugar | Appendix 4: Refractive Index: to determine % sugar |

b. Provide a flowchart of your anticipated combined procedure to show how you plan on completing all 3 Tasks in the time available in each session (i.e. after you have considered each of the procedures provided). Highlight on your flow chart the parts that are team based. There is a blank page following to allow adequate space for your flowchart.

|  |  |  |  |
| --- | --- | --- | --- |
| Session 1 |  | Temperature of waterbath |  |
|  |  | **Team:** Prepare standards % sugar |
|  | Subsample bulk sample |  |
|  | Dissolve triplicate samples in water |  |
| **Team:** Run RI on Sugar |  | **Team :**Calculate and report  Dry each filter paper in drying oven |
|  | Temperature of waterbath |
|  | Filter samples  Evaporate basins (overnight)  Clean-up |
| Session 2 |  | Temperature of waterbath |  |
| Weigh back evap basins | Set-up and run floatation of sand/sawdust mixture | **Team:** Prepare standards % sugar  **Team:** Run RI on sugar/ report |
|  | Filter sand and sawdust beakers  Clean-up | Filter papers to drying oven |
| Session 3 |  | Weigh everything back  Repeat any tasks identified |  |

c. Identify the resources/equipment required to complete all three tasks.

|  |  |  |
| --- | --- | --- |
| Task A | Task B | Task C |
| Plastic sheet | Thermometer | Balance |
| spatula |  | Sugar |
| weighboats |  | Weigh boat |
| Small beakers |  | refractometer |
| 600mL beakers |  | Purified water |
| Medium evaporating basins |  | Glass droppers (pasteur pipette) |
| Retort stands and ring |  | 50 mL volumetric flasks |
| Filter funnels |  | Propanone |
| Filter papers |  |  |
| Steam bath |  |  |
| Drying oven |  |  |
| Balance |  |  |
| Small brush |  |  |
| Stirring rod |  |  |
| Purified water |  |  |
| Wash bottles |  |  |

d. List your priority order to ensure all allocated work is completed in the three 2-hour sessions (i.e. assuming nothing goes wrong!).

1. The first temperature reading should be taken and plotted

2. The long task is the % composition so the sample reduction should be undertaken

3. Triplicate samples should be dissolved in water (if the urgent sample hasn’t arrived the standards could be prepared)

4. Next temperature reading taken

5. Triplicate samples should be filtered and basins put on the waterbath

6. Sand and sawdust should be placed in drying oven

7. Everything gets pushed back when the urgent samples arrive and team work on the % sugar analysis

e. Identify where the tasks could be broken down into smaller components to provide additional efficiency and maintain workflow.

As above for the long task, breaking down into smaller components makes it more efficient and while one ‘bit’ is happening something else can be undertaken e.g. taking the temperature and the workflow is maintained.

Steps 2, 3, 5 are smaller tasks within the whole task of % composition

At step 7 urgent samples are slotted into the schedule when they arrive. Smaller components of this task would be the preparation of the standards, the optimisation of the refractometer

**2. Work in a team environment**

Explain how the team determined the work to be undertaken by each member in each of the sessions, considering the following:

1. Recognition of personal abilities and limitations.

Ensured each member had been trained in the procedure to be undertaken.

One member has been delegated to prepare the standards and QC sample while the remaining member will run the samples. (The role to be reversed in the subsequent session)

If one member not trained ensure that this happens prior to the task.

Goal for each member is to complete all tasks prescribed.

1. How roles would be confirmed during the actual laboratory session.

Check to be made that each person in the team is where they are expected to be. If not the operational order may change. This would be negotiated on the day depending on where the person was at with their other tasks.

1. The responsibility of each team member, including yourself, to report the results in the time frame.

By the end of the Assessment (ie session 3) each member would have completed at least once, each of the components of the team task.

If time (or circumstances during the laboratory session) is a problem some negotiation of task allocation would be necessary.

Each team member is to be conscious of the workload of the other members at the time of arrival of the urgent sample.

1. The importance of considering sensitivity of other team member’s backgrounds and beliefs.

The Laboratory code of conduct would include the need for considering the sensitivity of other team member’s backgrounds and beliefs.

It is important to consider that all communications are clear and understood, that all suggestions are treated with respect, that information is shared

1. How will the team review the workplan when an urgent sample arrives?

The team will identify who is at a stage that can be stopped safely (by considering whether the task currently on can be put on hold for example leave evaporating basins on the steam bath or leaving samples to filter) and this person would take ownership of the sample for the team by completing necessary paperwork etc.

Prior to the urgent samples arriving one member of the team has been allocated to prepare the standards and the QC samples, as indicated in their workplan, hence they are ready to read the samples when they arrive.

Depending on where each individual member is up to in the long task work would be safely secured and the RI readings taken and analysed for reporting by the due time.

1. What alternatives were considered by the team for the allocation of work? (Provide at least one)
2. Each person stop and prepare the standards and samples when they arrive
3. One person does it all in one session and then swap for the next session
4. What problem solving strategies has the team decided to use, to consider possible causes and solutions to any problem that arises? (Provide at least one)

Good planning and sequencing of the task

Timely recognition of the arrival of the sample

Rotation of the task between members if difficulties have arisen for one member

**3. Knowledge and skill development**

1. During the individual and team planning you have undertaken for this Assessment, reflect on your own involvement and identify your strengths and weaknesses.

Student response should have indicated their own personal ideas. This could have included but is not limited to things such as: (could be strength or weakness identified)

Planning

Working in a designated team to complete a task

Listen carefully and be responsive to other suggestions

Be open to changes in plan if the workflow can be improved

Personal reflections could be worded

\* love this type of work so will do more study in the area

\* like the idea of scheduling and will look at further scheduling courses

\* team member communications could have been better so would look at communication courses

b. List skill development opportunities (at least three) you have undertaken in the laboratory that have provided you with additional knowledge of the laboratory area. (This could be as individual skills and associated knowledge).

Student responses can include, but are not limited to:

Safety Data sheet interpretation

Separation techniques (such as filtration, chromatography, distillation, evaporation, crystallisation)

Melting points

Boiling points

Refractive index

Slide preparation

Hazard identification

Risk Assessment

Biological methods and theory

Chemical methods and theory

Instrumental techniques (such as pH, conductivity, DO, UV-vis analysis, IR analysis, colorimetric analysis)

Microscope use

Solution preparations

## Appendices

Appendix 1

**Sample reduction: Cone and quartering laboratory sample to analytical sample**

# **INTRODUCTION**

A sample is a representative portion of a large mass of material. The method of reducing a large mass into a smaller, easier to manage portion should not cause any change to the physical and chemical characteristics of the original material.

# **PURPOSE**

The procedure is for the reduction down to the analytical sample size required by a particular method from a laboratory sample of no more than 250 g.

**Note:**

1. If the sample size is larger than 500 g it will require sub-sampling initially by another technique such as a riffle box.
2. The sample should not contain toxic material that would require wearing of additional PPE such as mask.

# **SCOPE**

This standard operating procedure applies to all bulk materials received by the laboratory and the sub-sampling down to the required sample mass.

# **RESPONSIBILITIES**

The Laboratory Manager or their delegate has overall responsibility for this standard operating procedure. They are to review any problems experienced (non-conforming product/service) and take appropriate action. The problem and any actions taken are then to be recorded.

Laboratory staff, if appropriately trained, may undertake responsibility for all tasks in this standard operating procedure.

# **RELATED DOCUMENTS**

This procedure should be read in conjunction with the following related documents:

* Laboratory Manual
* Quality Control Manual
* WHS Manual

1. **WHS**
   1. **Clothing**

Wear the following PPE when conducting this standard operating procedure:

* Closed footwear
* Laboratory coat
* Safety glasses
* Gloves – nitrile
  1. **Housekeeping**

Wash hands and ensure the workstation is clean and tidy before commencing this standard operating procedure. When the task is complete, wash hands, clean the workstation and dispose of any waste materials according to workplace procedures.

# **PROCEDURE**

* 1. **Materials, reagents and equipment**
     1. Materials
* Sample as received by the laboratory
  + 1. Equipment
* Plastic sheet (approximately 45 cm x 45 cm)
* Large spatula
* Plastic weighboats
  1. **Method**
     1. Determine the approximate mass required of the analytical sample (note how many samples are required)
     2. Place the plastic sheet on the laboratory bench
     3. Record the information on the sample container and check against any chain of custody paperwork accompanying the sample
     4. Tip the sample onto the plastic sheet
     5. Ensure the sample is well mixed by carefully repositioning the bulk using small scoops to form a cone on a different section of the plastic
     6. Repeat 7.2.5 until the sample appears homogeneous
     7. Gently flatten the cone and divide into four using the spatula
     8. Two opposite quarters are removed from the sample and a new cone is prepared from the sample remaining
     9. Steps 7.2.6 – 7.2.8 are repeated until the final sample is of mass required
     10. The remaining sample is then repacked into a labelled container as the laboratory sample from which the analytical sample could be taken
     11. Dispose of the left-over sample according to laboratory procedures and clean down the work area

Appendix 2

**Determine % composition of sample of sand, salt and sawdust**

This separation uses the physical properties of solubility, density and basic laboratory equipment to complete the task. If the sample requires sub-sampling you will need to follow a procedure for sample reduction such as in 4 below. This procedure commences with a Laboratory Sample of approximately 50 g and uses a combination of simple techniques to reach the reported values. It should be note that there are a number of different combinations that could be considered and this may have been the focus of a previous class activity.

The analysis is conducted in triplicate.

**Procedure:**

(It is important to read the entire practical prior to commencement to limit blockages to work flow)

1. Using clean and dry weigh boats and an analytical balance, weigh out, in triplicate approximately 5 g of the sample (record the mass taken)
2. Quantitatively transfer the samples into small beakers, using purified water (you should aim for no more than 50 mL in the beaker)
3. Swirl and then allow the mixture to stand while you prepare step 5
4. Label and weigh three medium sized evaporating basins
5. Prepare a simple filtration apparatus for each mixture, using a weighed evaporating basin, filter funnel and filter paper
6. Quantitatively filter each solution through the filter paper into the evaporating basin
7. The evaporating basin now contains a salt solution and there should be no salt in the filter paper
8.  You need both the solution in the evaporating basin and also the material in the filter funnel. Do not throw anything out!
9. Place the evaporating basins over a steam bath taking care not to contact the steam
10. Place the filter papers back into the small beakers and place into a drying oven until dry (the next session maybe)
11. Remove the beakers with the filter papers, from the drying oven and allow to cool
12. While the beakers are cooling, weigh and record the mass of six labelled filter papers (ensure you do not use PS papers as the solution will not pass through)

*The next section of this practical relies on separating the sand and salt by density, but it is important that you do not delay during the process. If the dry mixture is swirled in a beaker of water the sand will generally sink straight to the bottom and the sawdust could be decanted into another beaker. The process will take a few repetitions until you have a separation of the sand and sawdust in different beakers (but also lots of beakers of water). As the salt has been removed the separated components will only require filtration, the water is able to go down the sink.*

1. Carefully brush the sand and sawdust into weigh boat
2. Obtain a 600 mL beaker and half fill with water (tap-water is fine)
3. Obtain a number of additional empty beakers
4. Transfer the sand and sawdust into the beaker with lots of swirling
5. Quickly decant the sawdust into a clean beaker
6. Repeat the process until you have a beaker with only sand and a beaker with only sawdust
7. Decant off as much of the water from each beaker as possible
8. Use the filter papers weighed in step 12 to filter each beaker of sand and sawdust
9. Dry each filter and then reweigh, recording your values on the Laboratory Data and Calculation Sheet
10. Wash and dry all equipment and return to storage
11. Complete the calculations and report the average % sand, salt and sawdust for your sample

Appendix 3

**Measurement of temperature** (taken fromPart 3 Measurement of sample or equipment temperature of *M116 Calibration of thermometer, measuring of temperature of sample/equipment*)

**Part 3: Measurement of temperature of sample or equipment**

3.1.1 Obtain a thermometer that has been calibrated

3.1.2 Place the thermometer so that a stable reading can be obtained (for a liquid sample the immersion mark must be covered by the sample, for a drying oven this will generally mean suspending the thermometer through the top of the oven)

3.1.3 Allow the reading to stabilise

3.1.4 Record the value

3.1.5 Repeat at least once and average the result before reporting

Appendix 4

**Refractive Index:** To determine % sugar

**Standard Preparation**

1. Obtain 3 clean 50 mL volumetric flasks and label 5%, 10% and 15% sugar, team initials and date
2. Prepare 50 mL of each of the three standard sugar solutions by quantitatively transferring 2.5 g, 5 g and 7.5 g sugar into the 3, 50 mL labelled volumetric flasks
3. Make up to the mark with purified water, cap and shake

**Refractive Index**

1. Ensure refractometer prism is clean
2. Use a pasteur pipette to transfer a small volume of the standard solutions onto the refractometer, cleaning between samples with water and propanone
3. Adjust the settings of the refractometer to obtain the true value of refractive index for each of the standards, the 2 quality control samples and the four production samples
4. Record your results into the table on the results sheet
5. Graph your values of refractive index (vertical axis) versus standard sugar concentration
6. Determine the concentrations of the 4 unknown sugar solutions (%) and the two quality control samples
7. Report your results on the paperwork provided
8. Clean up the area

## Part 3: Assessment Checklist

The student’s copy of the Assessment Checklist will be used by you to capture evidence of their performance in any type of project. This checklist outlines all the required criteria you will be marking the student on. All criteria must be met. The following checklist contains benchmark responses for you to use when assessing to ensure reliability of judgement. You may ask questions during the demonstration or if appropriate directly after the assessment has been completed noting that both the question and student response needs to be captured on the checklist.

| Part | Instructions | S | U/S | Assessor Comments |
| --- | --- | --- | --- | --- |
| **1** | Completes the Project answering all questions in the spaces provided. |  |  | *Student completes all questions in Part 1 by referring to the provided documentation, as per completed sample benchmark responses provided* |
| **2** | Laboratory Planning: student responds to all the questions and notes the decisions made by the team for Task C and possible contingencies.  During team discussions, the student needs to:   * Respectfully listen to the views of team members * Contribute own ideas to team discussion * Display an openness to other ideas and suggestions * Work with team members to reach an agreed approach |  |  | *Student completes all questions in Part 2 by referring to the provided documentation, as per completed sample benchmark responses provided.*  *Student is observed participating in team discussion.*  *Did the student:*  *Respectfully listen to the views of team members*  *Contribute to the team discussion with own ideas*  *Display an openness to other ideas and suggestions*  *Work with team members to reach an agreed approach* |