# Knowledge assessment

**Assessment event 1 of 5**

## Criteria

### Unit code, name and release number

MSL973019 - Perform microscopic examination (1)

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

MSL50118 - Diploma of Laboratory Technology (1)

MSL40118 - Certificate IV in Laboratory Techniques (1)

MSL30118 - Certificate III in Laboratory Skills (1)

\*\*Amend the qualification box before distributing to the student. The information here should only contain the qualification the student is enrolled in\*\*

## Student details

### Student number

### Student name

## Assessment Declaration

* This assessment is my original work and no part of it has been copied from any other source except where due acknowledgement is made.
* No part of this assessment has been written for me by any other person except where such collaboration has been authorised by the assessor concerned.
* I understand that plagiarism is the presentation of the work, idea or creation of another person as though it is my own. Plagiarism occurs when the origin of the material used is not appropriately cited. No part of this assessment is plagiarised.

### Student signature and Date

Version: 1.0

Date created: 03/10/2019

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For queries, please contact:

Innovative Manufacturing, Robotics and Science SkillsPoint

Hamilton Campus

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This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

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## Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Assessment overview** | The objective of this assessment is to assess your knowledge as would be required to work with microscopes in a laboratory. |
| **Assessment Event number** | 1 of 5 |
| **Instructions for this assessment** | This is a written assessment and it will be assessing you on your knowledge of the unit.  This assessment is in 5 parts:   1. Multiple choice questions 2. True or False questions 3. Short answer question 4. Complete the table 5. Assessment feedback |
| **Submission instructions** | On completion of this assessment, you are required to upload it or hand it to your trainer for marking.  It is important that you keep a copy of all electronic and hardcopy assessments submitted to TAFE and complete the assessment declaration when submitting the assessment. |
| **What do I need to do to achieve a satisfactory result?** | To achieve a satisfactory result for this assessment all questions must be answered correctly. |
| **What do I need to provide?** | Pens |
| **Due date/time allowed** | 1.5 hours, TBA |
| **Assessment feedback, review or appeals** | Appeals are addressed in accordance with Every Students Guide to Assessment. |

## Part 1: Multiple choice

Read the question and each answer carefully. Put an X in the table next to your chosen answer.

1. The XY (coaxial) stage controls are used to:

Table 2 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. move the slide left to right and front to back |  |
| 1. move the stage up and down |  |
| 1. focus the condenser |  |
| 1. bring the sample into focus |  |

1. Kohler illumination is a method of setting up the microscope to achieve:

Table 3 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. optimal resolution in low light |  |
| 1. optimal resolution in bright light |  |
| 1. optimal resolution |  |
| 1. optimal resolve |  |

1. When not in use, the revolving nose piece should be set to:

Table 4 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. 4X |  |
| 1. 40X |  |
| 1. 100X |  |
| 1. 400X |  |

1. As magnification increases, the field of view:

Table 5 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. increases |  |
| 1. remains constant |  |
| 1. gets much larger |  |
| 1. decreases |  |

1. The intraocular distance is:

Table 6 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. dependent on your glasses |  |
| 1. dependent on the spacing between your eyes |  |
| 1. the same for everyone |  |
| 1. dependent on your overall level of vision |  |

1. The space between the objective and the focussed specimen is called:

Table 7 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. resolution distance |  |
| 1. condenser spacing |  |
| 1. working distance |  |
| 1. working field of vision |  |

1. Ethical behaviour in a laboratory would be considered to be:

Table 8 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. sharing confidential test results with your colleagues over lunch |  |
| 1. accidentally contaminating a sample and not informing your supervisor |  |
| 1. throwing out a sample that has incorrect paperwork and failing to inform the requesting or authorised doctor |  |
| 1. none of the above |  |

1. What types of samples might be studied under a microscope?

Table 9 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Microscopic organisms, living cells and tissues |  |
| 1. Macroscopic organisms |  |
| 1. Mineral samples, environmental samples |  |
| 1. a) and c) above |  |

1. Working laboratories use Laboratory Information Management System (LIMS) to maintain:

Table 10 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. client records |  |
| 1. sample results |  |
| 1. sample information |  |
| 1. all of the above |  |

1. Common causes of artefacts or incorrect results in microscopy could be:

Table 11 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. damage in the preparation technique |  |
| 1. improper staining |  |
| 1. faulty tissue preparation |  |
| 1. all of the above |  |

## Part 2: True or false

Read the question and then write **True** or **False** in the space provided.

Table 12 True or false

| Question | Write *True* or *False* |
| --- | --- |
| 1. It is ethical to share a patient’s test results with their family when they call |  |
| 1. It is sustainable to autoclave and reuse glass containers and test tubes |  |
| 1. Workplace procedures state you should report a spill immediately to your supervisor |  |
| 1. Workplace procedures state that when you find faulty equipment, you should never notify your supervisor or other staff |  |
| 1. Unclean sample preparation may lead to artefacts in the sample |  |
| 1. To make sure there are no air bubbles in a slide, you should drop it directly over the sample |  |
| 1. Incorrect results could be caused by poor training |  |
| 1. WHS procedures state that if another workmate is doing something unsafe, you should inform them immediately |  |
| 1. Light microscopy allows the viewer to see all organelles within living cells |  |
| 1. Light microscopy is only useful in the visible light spectrum |  |

## Part 3: Short answer

Read the question carefully. A word count is listed at the end of each question.

1. Explain the way in which each of the following are prepared or used and give an example of what specimen type you would use.
   1. Wet mount (10 to 30 words)

Preparation:

Example of specimen type:

* 1. Fixative (10 to 30 words)

Use:

Example of specimen type:

* 1. Smear (10 to 30 words)

Preparation:

Example of specimen type:

* 1. Counter stain (10 to 30 words)

Use:

Example of specimen type:

* 1. Squash (10 to 30 words)

Preparation:

Example of specimen type:

1. Where would you find the main scale reading on Vernier callipers (10 to 20 words)?
2. Where would you find the reading for the Vernier scale (10 to 20 words)?
3. When working in a laboratory undertaking testing of patient specimens, what legal requirements need to be considered (10 to 30 words)?
4. You have received and logged a sample and will view it under a microscope before storing it as per company protocol. List three environmental sustainability issues related to this task (10 to 30 words):
5. What are traceability requirements and how are they managed in a laboratory (10 to 50 words)?

Traceability requirements:

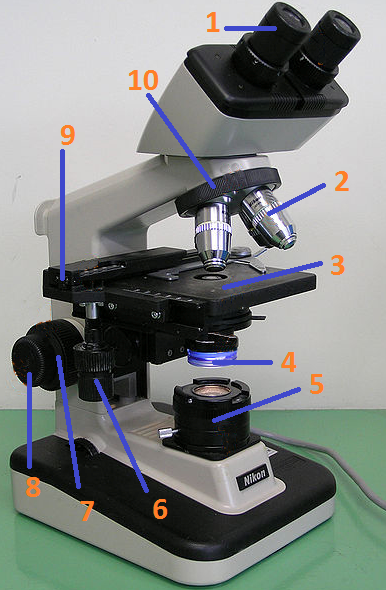
How they are managed:

1. If another student / colleague has broken a beaker of bacterial broth and it is all over their workbench, their clothes and the floor, what steps should you take (10 to 40 words)?
2. What is an ocular micrometre, and how is it used (10 to 40 words)?
3. What is a stage micrometre (10 to 30 words)?
4. Provide three examples of the hazards when preparing and viewing biological samples (10 to 30 words)?

## Part 4: Complete the table

Read the question carefully and complete each row of each table below.

1. Label all parts of this light microscope:



[Microscope](https://commons.wikimedia.org/wiki/File:OSC_Microbio_02_03_Brightfiel.jpg) by [CNX Open Stax](https://openstax.org/books/microbiology/pages/1-introduction) under [CC BY 4.0](https://creativecommons.org/licenses/by/4.0/deed.en)

Table 13 microscope parts

|  |  |
| --- | --- |
| # | Name of part |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. Match the following functions with the list of parts below, by placing the number for the correct answer in the number column:

Table 14 Match parts a

|  |  |
| --- | --- |
| Function | Number |
| Secures microscope slide into position |  |
| Adjustment allows for difference in left and right eye focus |  |
| Focuses light onto the sample |  |
| Adjust the intensity of light passing through the sample |  |
| Powers the instrument |  |

Table 15 Match parts b

|  |  |
| --- | --- |
| # | Name of part |
|  | Condenser |
|  | Iris field diaphragm |
|  | Stage clamp |
|  | On / off switch |
|  | Dioptric adjustment ring |

1. Calculate the total magnification of the following combinations of objectives and oculars:

Table 16 magnification

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Objective |  | 10X | 40X | 100X |
| Ocular | x7 |  |  |  |
| x10 |  |  |  |
| x15 |  |  |  |

1. Read the following Vernier scales and write the correct measurement

Table 17 Vernier scale

|  |  |  |
| --- | --- | --- |
| # | Scale | Your reading |
|  |  |  |
|  |  |  |

1. Explain how these microscopes work and provide an example of samples you would study with them (5 to 30 words per cell):

Table 18 functions microscope

|  |  |  |
| --- | --- | --- |
| Microscope | How does it work? | Example of use |
| Compound light |  |  |
| Dark field |  |  |
| Phase contrast |  |  |
| Fluorescent |  |  |
| Electron |  |  |
| Polarising light |  |  |
| Stereomicroscope |  |  |

1. Completed the table below for work health and safety (WHS) requirements in a microbiology laboratory (5 to 30 words per cell).

Table 19 WHS

|  |  |
| --- | --- |
| Stage of processing | Work health and safety requirements |
| Sample receipt |  |
| Preparation for work |  |
| Handling biological materials |  |
| Analysis of results |  |
| Housekeeping |  |
| Data entry |  |

1. What characteristics of samples can be seen clearly when viewed with light microscopy? Complete the table below, and provide an example for each row (5 to 40 words per cell):

Table 20 characteristics

|  |  |
| --- | --- |
| Sample characteristic | What can be seen under a light microscope? |
| Shape and size of particles |  |
| Presence of contamination |  |
| Colour |  |
| Consistency and variability |  |
| Number of cells (e.g. cells in blood or other particulate samples, such as a yeast suspension or pollen grains) |  |
| Type of cells |  |
| Colour/staining and morphology |  |

1. Complete the table below for some causes and troubleshooting of artefacts and incorrect results (5 to 30 words per cell):

Table 21 troubleshooting

|  |  |  |
| --- | --- | --- |
| Issue | Cause | Fix |
| Bubbles in slide, wrinkles or tears in sample |  |  |
| Dust, wriggly lines or dots |  |  |
| Hazy or blurred images |  |  |
| Swelling or shrinkage of tissues |  |  |

## Part 5: Assessment Feedback

*NOTE: This section* ***must*** *have the assessor signature and student signature to complete the feedback.*

### Assessment outcome

Satisfactory

Unsatisfactory

### Assessor Feedback

Was the assessment event successfully completed?

If no, was the resubmission/re-assessment successfully completed?

Was reasonable adjustment in place for this assessment event?  
*If yes, ensure it is detailed on the assessment document.*

Comments:

### Assessor name, signature and date:

### Student acknowledgement of assessment outcome

Would you like to make any comments about this assessment?

### Student name, signature and date

***NOTE: Make sure you have written your name at the bottom of each page of your submission before attaching the cover sheet and submitting to your assessor for marking.***