# Knowledge assessment 2

**Assessment event 2 of 3**

# Trainer & Assessor Marking Guide

## Criteria

### Unit code, name and release number

MSL973015 - Prepare culture media (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\*\*

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For queries, please contact:

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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 |
| --- | --- |
| **Instructions for the trainer and assessor** | This is a written assessment and will be assessing the student on their knowledge of the unit.  This assessment is in 2 parts:   1. Multiple choice questions 2. Short answer questions   Model answers, sample responses or a criteria for each question are provided below.  Use these to support your judgement when determining a satisfactory result.  The student’s response to each question must contain the information indicated in this marking guide in order for their response to be correct. 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 question, 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.  Ensure the students name appears on the bottom of each page of the submitted assessment. |
| **About this marking guide** | The student’s response to each question must contain the information indicated in this marking guide in order for their response to be correct.  All questions must be answered 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, student workbook for this unit |
| **Assessor must provide** | A classroom suitable for a test, a timer and a copy of this assessment event for each student |
| **Time allowed** | 30 minutes |

## Part 1: Multiple choice

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

1. What indicators can be used to show that sterility has been achieved?

Table 2 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. Autoclave tape |  |
| 1. Thermolog strips |  |
| 1. Sticky tape |  |
| 1. Both a) and b) | X |

1. What is meant by aseptic technique?

Table 3 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. To kill all bacteria |  |
| 1. To work in an environment free of contamination | X |
| 1. To gain a pure culture |  |
| 1. To wipe down the benches with antiseptic |  |

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

Table 4 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 | X |

1. What is the purpose of autoclaves, boiling, high pressure steam and high temperatures?

Table 5 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. The use of steam to kills microorganisms |  |
| 1. The use of pressure to kill microorganisms |  |
| 1. The use of heat to kill microorganisms |  |
| 1. All of the above | X |

1. What legal requirements are there for a microbiology laboratory?

Table 6 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. None |  |
| 1. To follow all relevant legislation, guidelines and work under an accrediting body (i.e. NATA) | X |
| 1. To make sure patient confidentiality is met |  |
| 1. To make sure that staff are paid correctly |  |

1. Gas and chemical treatments sterilise by:

Table 7 Multiple choice

| Answer choices | Put X next to your answer |
| --- | --- |
| 1. removing oxygen to starve aerobic microorganisms |  |
| 1. killing microorganisms through chemical means |  |
| 1. the use of heat to kill microorganisms |  |
| 1. both a) and b) | X |

## Part 2: Short answer

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

1. Explain what membrane filtration is and what it involves (10 to 20 words):

Filtration allows for the exclusion of organisms based upon size. There are many types of filtration techniques, but when sterilizing a system membrane filtration is used. Membrane filtration traps contaminants larger than the pore size on the surface of the membrane.

1. What is the purpose of sterilisation (5 to 20 words)?

To ensure that there are no unwanted contaminants in your sample and analysis.

1. What would happen to culture media quality if stored incorrectly? Give two examples of poor storage and the effect on the culture media (10 to 20 words):

Would not be sterile

Any of the below, or any other suitable answer:

Fridge broken

Caps left off the broth

Uneven temperature in fridge

Lids left off plates

1. You are about to prepare culture media. List the environmental sustainability issues related to this task (10 to 30 words):

All of the below and/or any other answer student provides that is correct:

Biohazardous materials – safe disposal

Consumption of energy (electricity)

Water usage (RO water – electricity and water usage)

Sharps – safe disposal, could be recycled

Consumables – safe disposal and / or recycling of

1. How regularly should culture media stocks be checked to make sure they are suitable for use (3 to 10 words)?

Once a month

1. How should plates and broths be stored and for how long will they remain viable (10 to 20 words)?

Plates - In the fridge upside down

Broths – in the fridge with a cap on

About 4-6 weeks plates

About 3-6 months broths

1. What temperature and for how long should the autoclave be set to for the sterilisation of standard culture media (2 to 10 words)?

121oC for 15 minutes

1. Complete the table below for hazards and risks in a laboratory, by listing a risk and the controls in place to prevent that risk.
   1. Risk column (1 to 5 words per cell)
   2. Controls column (5 to 15 words per cell)

Table 8 short answer

| Hazard | Risk | Controls |
| --- | --- | --- |
| Sharps | Cuts, infection | Work aseptically, dispose in correct containers, use carefully, keep in appropriate packaging until use |
| Sources of heat | Burns | Training in safe usage, take care and use only when instructed, do not leave unattended flame |
| Molten agar, fluids under pressure | Burns | Use SDS, all containers labelled with risk and hazard statements, wear PPE, pour/mix etc carefully  Use equipment with manufacturers instructions |
| Ultraviolet (UV) light | Burns, eye and skin damage, cancer | Don’t use when people are in the laboratory, only turn on UV light at night or when there is no laboratory work, safety signs warning not to enter the laboratory when UV light is on, automatic UV shut off when laboratory is not in use |
| Microorganisms | Infection | Work aseptically |
| Hazardous substances | Spills, burns, inhalation exposure etc | Use SDS, all containers labelled with risk and hazard statements, wear PPE, pour/mix etc carefully |

1. Complete the following table comparing radiation and autoclaving as a method of sterilisation. Circle the correct answer.

Table 9 short answer

|  |  |  |
| --- | --- | --- |
| Sterilisation technique | Penetrates plastic packaging | High temperature required |
| Autoclaving | Yes / No | Yes / No |
| Radiation | Yes / No | Yes / No |

1. List the Work Health and Safety (WHS) requirements for each stage of processing samples in the table below (5 to 20 words per cell):

Table 10 short answer

| Stage of processing | WHS requirements |
| --- | --- |
| Preparation for work | Disinfection of workstation and equipment  Handwashing  PPE |
| Handling biological materials | PPE  Sharps and infectious agents covered until use and after use |
| Analysis of results | PPE  Care with handling breakable / infectious items (cuts and infection control) |
| Housekeeping | Disinfection of workstation and equipment  Handwashing  PPE  Safe and correct disposal of wastes |
| Data entry | Electrical tagging  Wires and cables secured (trip hazards minimised) |

1. List two sterile practices used during aseptic transfer (15 to 20 words):

Flaming the inoculation instrument/loop/wire

Flaming the neck of a broth tube/bottle

Working close to the Bunsen burner

1. What is the effect of poor sterile practices and hygiene procedures on the culture and results (10 to 30 words)?

The culture will be contaminated with microorganisms not from the original sample.

The results will be inaccurate