



# ASSESSMENT RESOURCE BOOK

UTILITY LABORATORY  
TECHNICIAN SERVICES III



**MNSDA**



Ministry of Environment  
Climate Change & Technology

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## **Instructions to the Assessor on Competency Based Assessment (CBA)**

Assessment is the process of identifying a participant's current knowledge, skills and attitudes sets against all elements of competency within a unit of competency.

### **Suggested Assessment Methods**

For each unit of competency, a number of assessment tools have been identified including:

- ✓ Work Projects
- ✓ Oral Questions
- ✓ Written Questions
- ✓ Third Party Statements
- ✓ Observation Checklists.

Instructions and Evidence Recording Sheets have been identified in this Assessment Manual for use by Assessors.

### **Alternative Assessment Methods**

Whilst the above-mentioned assessment methods are suggested assessment methods, the assessor may use an alternate method of assessment taking into account:

- a. The nature of the unit
- b. The strengths of participants
- c. The number of participants in the class
- d. Time required to complete assessments
- e. Time dedicated to assessment
- f. Equipment and resources required.

Alternate assessment methods include:

- ✓ Practical demonstrations
- ✓ Practical demonstrations in simulated work conditions Problem solving
- ✓ Portfolios of evidence
- ✓ Critical incident reports
- ✓ Journals
- ✓ Oral presentations
- ✓ Interviews
- ✓ Videos
- ✓ Visuals/slides/audio tapes
- ✓ Case studies
- ✓ Log books
- ✓ Projects and Role plays
- ✓ Group projects
- ✓ Recognition of Prior Learning.

Whilst there is no specific instruction or evidence collection documents for all the alternative assessment methods, assessors can record competency in the „Other“ section within the “Competency Recording Sheet”.

### **Selection of Assessment Methods**

Each assessor will determine the combination of Assessment Methods to be used to determine Competency for each Competency Unit on a student by student basis.

“Sufficient“ evidence to support the „Competent“/“Not Yet Competent“ decision must be captured.

In practice this means a minimum of two - three Assessment Methods for each candidate for each Competency Element is suggested.

At least one method should provide evidence of practical demonstration of competence.

The following assessment methods deemed to provide evidence of practical demonstration of competence include:

- ✓ Practical Work Projects
- ✓ Third Party Statement
- ✓ Observation Checklist.

### **Assessing Competency**

Competency based assessment does not award grades, but simply identifies if the participant has the knowledge, skills and attitudes to undertake the required task to the specified standard.

Therefore, when assessing competency, an assessor has two possible results that can be awarded:

- ✓ "Competent" (C)
- ✓ "Not Yet Competent (NYC)

### ***Competent (C)***

If the participant is able to successfully answer or demonstrate what is required, to the expected standards of the performance criteria, they will be deemed as "Competent" (C).

The assessor will award a "Competent" (C) if they feel the participant has the necessary knowledge, skills and attitudes in all assessment tasks for a unit.

### ***Not Yet Competent' (NYC)***

If the participant is unable to answer or demonstrate competency to the desired standard, they will be deemed to be „Not Yet Competent" (NYC).

This does not mean the participant will need to complete all the assessment tasks again. The focus will be on the specific assessment tasks that were not performed to the expected standards.

The participant may be required to:

- a. Undertake further training or instruction
- b. Undertake the assessment task again until they are deemed to be "Competent".

### **Trade Testing (Recognition of Prior Learning)**

Trade Testing or Recognition of Prior Learning is the process that gives current industry professionals who do not have a formal qualification, the opportunity to benchmark their extensive skills and experience against the standards set out in each unit of competency/subject.

This process is a learning and assessment pathway which encompasses:

- ✓ Recognition of Current Competencies (RCC)
- ✓ Skills auditing
- ✓ Gap analysis and training
- ✓ Credit transfer.

### **Code of practice for assessors**

This Code of Practice provides:

- ✓ Assessors with direction on the standard of practice expected of them

- ✓ Candidates with assurance of the standards of practice expected of assessors
- ✓ Employers with assurance of the standards maintained in the conduct of assessment.

The Code detailed below is based on the available international code of ethics and practice.

- ✓ The differing needs and requirements of the person being assessed, the local enterprise and/or industry are identified and handled with sensitivity
- ✓ Potential forms of conflict of interest in the assessment process and/or outcomes are identified and appropriate referrals are made, if necessary
- ✓ All forms of harassment are avoided throughout the planning, conducting, reviewing and reporting of the assessment outcomes
- ✓ The rights of the candidate are protected during and after the assessment
- ✓ Personal and interpersonal factors that are not relevant to the assessment of competency must not influence the assessment outcomes
- ✓ The candidate is made aware of rights and process of appeal
- ✓ Evidence that is gathered during the assessment is verified for validity, reliability, authenticity, sufficiency and currency
- ✓ Assessment decisions are based on available evidence that can be produced and verified by another assessor
- ✓ Assessments are conducted within the boundaries of the assessment system policies and procedures
- ✓ Formal agreement is obtained from both the candidate and the assessor that the assessment was carried out in accordance with agreed procedures
- ✓ The candidate is informed of all assessment reporting processes prior to the assessment
- ✓ The candidate is informed of all known potential consequences of decisions arising from an assessment, prior to the assessment
- ✓ Confidentiality is maintained regarding assessment results
- ✓ The assessment results are used consistently with the purposes explained to the candidate
- ✓ Opportunities are created for technical assistance in planning, conducting and reviewing assessment procedures and outcomes.

## **Instructions and checklist for assessors**

### **Instructions**

General instructions for the assessment

- ✓ Assessment should be conducted at a scheduled time that has been notified to the candidate
- ✓ Facilitators must ensure participants are made aware of the need to complete assessments and attend assessment sessions
- ✓ If a participant is unable to attend a scheduled session, they must make arrangements with the Assessor to undertake the assessment at an alternative time
- ✓ At the end of the assessment the Assessor must give feedback and advise the participant on their C/NYC status
- ✓ Complete the relevant documentation and submit to the appropriate department.

### *Preparation*

- ✓ Gain familiarity with the Unit of Competency, Elements of Competency and the Performance Criteria expected
- ✓ Study details assessment documentation and requirements
- ✓ Brief candidate regarding all assessment criteria and requirements.

### *Briefing Checklist*

- ✓ Begin the assessment by implementing the following checklist and then invite the candidate to proceed with assessment.

## Checklist for Assessors

#	Activity to Follow	Tick	Remarks
<b>Prior to the assessment I have:</b>			
1	Ensured the candidate is informed about the venue and schedule of assessment.		
2	Received current copies of the performance criteria to be assessed, assessment plan, evidence gathering plan, assessment checklist, appeal form and the company's standard operating procedures (SOP).		
3	Reviewed the performance criteria and evidence plan to ensure I clearly understood the instructions and the requirements of the assessment process.		
4	Identified and accommodated any special needs of the candidate.		
5	Checked the set-up and resources for the assessment.		
<b>During the assessment I have:</b>			
6	Introduced myself and confirmed identities of candidates.		
7	Put candidates at ease by being friendly and helpful.		
8	Explained to candidates the purpose, context and benefits of the assessment.		
9	Ensured candidates understood the assessment process and all attendant procedures.		
10	Provided candidates with an overview of performance criteria to be assessed.		
11	Explained the results reporting procedure.		
12	Encouraged candidates to seek clarifications if in doubt.		
13	Asked candidates for feedback on the assessment		
14	Explained legal, safety and ethical issues, if applicable.		
<b>After the assessment I have:</b>			
14	Ensured candidate is given constructive feedback.		
16	Completed and signed the assessment record.		
17	Thanked candidate for participating in the assessment.		

## Instructions for recording competency

### Specifications for Recording Competency

The following specifications apply to the preparation of Evidence Gathering Plans:

- ✓ A Competency Recording Sheet must be prepared for each candidate to ensure and demonstrate all Performance Criteria and Competency Elements are appropriately assessed. This Sheet indicates how the Assessor will gather evidence during their assessment of each candidate
- ✓ This Competency Recording Sheet is located at the end of the Assessment Plan It is the overriding document to record competency
- ✓ Assessor may vary the Competency Recording Sheet to accommodate practical and individual candidate and/or workplace needs
- ✓ Assessor must place a tick (☑) in the „Assessment Method“ columns to identify the methods of assessment to be used for each candidate
- ✓ Multiple Competency Elements/Performance Criteria may be assessed at the one time, where appropriate

- ✓ The assessor and participant should sign and date the Competency Recording Sheet, when all forms of evidence and assessment have been completed
- ✓ The assessor may provide and feedback or clarify questions which the participant may have in regards to the assessment grade or findings
- ✓ All documents used to capture evidence must be retained, and attached to the Competency Recording Sheet for each candidate for each Competency Unit.

## **Instructions for different assessment methods**

### **Specifications for Work Project Assessment**

These guidelines concern the use of work projects.

The work projects identified in the Training Manuals involve a range of tasks, to be performed at the discretion of the Assessor.

Work project tasks can be completed through any form of assessment as identified in the Trainer and Trainee Manuals and stated at the start of this section.

Assessors should follow these guidelines:

- ✓ Review the Work Projects at the end of each „Element of Competency“ in the Trainee Manual to ensure you understand the content and what is expected
- ✓ Prepare sufficient resources for the completion of work activities including:
  - Time – whether in scheduled delivery hours or suggested time participants to spend outside of class hours
  - Resources – this may involve technical equipment, computer, internet access, stationery and other supplementary materials and documents
- ✓ Prepare assessment location (if done in class) making it conducive to assessment
- ✓ Explain Work Projects assessment to candidate, at the start of each Element of Competency. This ensures that participants are aware of what is expected and can collate information as delivery takes place.
- ✓ Assessors can use the following phrase as a guide (where an „X“ is identified, please input appropriate information):

“At the end of each Element of Competency there are Work Projects which must be completed. These projects require different tasks that must be completed.

These work projects are part of the formal assessment for the unit of competency titled X.

- You are required to complete these activities:
  - Using the ‘X’ method of assessment.
  - At ‘X’ location
  - You will have ‘X time period’ for this assessment.
- You are required to compile information in a format that you feel is appropriate to the assessment.
- Do you have any questions about this assessment?”
- ✓ Commence Work Project assessment:
- ✓ The assessor may give time for participants to review the questions at this time to ensure they understand the nature of the questions. The assessor may need to clarify questions.
- ✓ Participants complete work projects in the most appropriate format

- ✓ Participants must submit Work Project evidence to the assessor before the scheduled due date
- ✓ Assessor must assess the participant's evidence against the competency standards specified in each Element of Competency and their own understanding. The assessor can determine if the participant has provided evidence to a "competent" standard.
- ✓ Transcribe results/details to Competency Recording Sheet
- ✓ Forward/file assessment record.

### **Specifications for Oral Question Assessment**

These guidelines concern the use of oral questioning. Assessors should follow these guidelines.

- ✓ Prepare Assessment Record for Oral Questioning. One record for each candidate:
  - Enter Student name
  - Enter Assessor name
  - Enter Location
  
- ✓ Familiarize self with Questions to be asked
- ✓ Prepare assessment location (table and chairs) making it conducive to assessment
- ✓ Explain Oral Questioning assessment to candidate, using the following phrase as a guide (where a "X" is identified, please input appropriate information):  
 "These oral questions are part of the formal assessment for the unit of competency titled X.  
 There are X questions and you are required to answer all of them to the best of your ability and I will record whether or not you have answered correctly.
  - I will give you feedback at the end of the assessment.
  - Do you have any questions about this assessment?"
  
- ✓ Commence Oral Questioning assessment
- ✓ Complete Assessment Record for the Oral Questioning by:
  - Ticking C or NYC, as appropriate
  - Entering „Remarks" as required
  - Completing Oral Questioning within 60 minutes
  
- ✓ Complete Oral Questioning and provide feedback to candidate
- ✓ Transcribe results/details to Competency Recording Sheet
- ✓ Forward/file assessment record.

### **Specifications for Written Question Assessment**

These guidelines concern the use of written questioning. Assessors should follow these guidelines.

- ✓ Familiarize self with Questions and Answers provided.
- ✓ Print and distribute copies of „Written Questions" for participants. Ideally this should take place with adequate time for participants to answer all questions before the expected due date.
- ✓ Explain Written Questioning assessment to candidate, using the following phrase as a guide (where a „X" is identified, please input appropriate information):  
 "These written questions are part of the formal assessment for the unit of competency titled X.  
 There are X questions and you are required to answer all of them to the best of your ability.

You may refer to your subject materials, however where possible try to utilise your existing knowledge when answering questions.

Where you are unsure of questions, please ask the Assessor for further instruction. This may be answering the question orally or asking the assessor to redefine the question.

We have X time for this assessment.

- The due date for completion of this assessment is X
  - On this date you must forward the completed questions to the assessor by X time on the date of X
  - Do you have any questions about this assessment?"
- 
- ✓ The assessor may give time for participants to review the questions at this time to ensure they understand the nature of the questions. The assessor may need to clarify questions. Participants may record written answers (where possible)
  - ✓ Participants must submit the written answers to the assessor before the scheduled due date
  - ✓ Assessor must assess the participant's written answers against the model answers provided as a guide, or their own understanding. The assessor can determine if the participant has answered the questions to a "competent" standard.
  - ✓ Transcribe results/details to Competency Recording Sheet
  - ✓ Forward/file assessment record.

### **Specifications for Observation Checklist**

These specifications apply to the use of the Observation Checklist in determining competency for candidates.

Only an approved assessor is authorized to complete the Observation Checklist.

The assessor is required to observe the participant, ideally in a simulated environment or their practical workplace setting and record their performance (or otherwise) of the competencies listed on the Observation Checklist for the Competency Unit.

To complete the Observation Checklist the Assessor must:

- ✓ Insert name of candidate
- ✓ Insert assessor name
- ✓ Insert identify of location where observations are being undertaken
- ✓ Insert date/s of observations – may be single date or multiple dates
- ✓ Place a tick in either the „Yes“ or „No“ box for each listed Performance Criteria to indicate the candidate has demonstrated/not demonstrated that skill
- ✓ Provide written (and verbal) feedback to candidate – as/if appropriate Sign and date the form
- ✓ Present form to candidate for them to sign and date
- ✓ Transcribe results/details to Competency Recording Sheet for candidate
- ✓ Forward/file Observation Checklist.

This source of evidence combines with other forms of assessment to assist in determining the "Competent" or "Not Yet Competent" decision for the participant.

### **Specifications for Third Party Statement**

These specifications relate to the use of a relevant workplace person to assist in determining competency for candidates.

The Third-Party Statement is to be supplied by the assessor to a person in the workplace who supervises and/or works closely with the participant.

This may be their Supervisor, the venue manager, the Department Manager or similar.

The Third-Party Statement asks the Supervisor to record what they believe to be the competencies of the participant based on their workplace experience of the participant. This

experience may be gained through observation of their workplace performance, feedback from others, inspection of candidate's work etc.

A meeting must take place between the Assessor and the Third Party to explain and demonstrate the use of the Third-Party Statement.

To complete the Third-Party Verification Statement the Assessor must:

- ✓ Insert candidate name
- ✓ Insert name and contact details of the Third Party
- ✓ Tick the box to indicate the relationship of the Third Party to the candidate
- ✓ Present the partially completed form to the Third Party for them to finalize
- ✓ Collect the completed form from the Third Party
- ✓ Transcribe results/details to Competency Recording Sheet for candidate Forward/file Third Party Statement.

The Third Party must:

1. Record their belief regarding candidate ability/competency as either:
  - Competent = Yes
  - Not Yet Competent = No
  - Unsure about whether candidate is competent or not = Not Sure

2. Meet briefly with the assessor to discuss and/or clarify the form.

This source of evidence combines with other forms of assessment to assist in determining the „Competent“ or “Not Yet Competent“ decision for the candidate.

A separate Third-Party Statement is required for each Competency Unit undertaken by the candidate.

## Unit-1: Apply Occupational Health and Safety requirements

Unit No 01  
 Unit Title Apply Occupational Health and Safety requirements  
 Unit Code CONCM04V1/21

### Evidence Matrix

Following matrix is developed using which the Assessment will be planned and undertaken.

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Clean work preparation areas</b>							
Clean preparation areas using appropriate cleaning agents and equipment according to workplace procedures	✓	✓		✓	✓		✓
Remove spillages using appropriate agents, personal protective equipment (PPE) and workplace procedures	✓		✓	✓	✓	✓	
Collect and segregate wastes in accordance with workplace procedures, relevant codes and regulations	✓	✓	✓	✓		✓	✓
<b>2. Clean and store equipment</b>							
Collect used equipment, inspect for faults and, where necessary, remove from service	✓		✓	✓		✓	✓
Use appropriate agents, apparatus and techniques to clean equipment	✓	✓		✓	✓		✓
Store clean equipment in the designated locations and manner	✓	✓	✓		✓	✓	
<b>3. Monitor stocks of materials and equipment</b>							
Perform stock checks and maintain records of usage as directed	✓	✓	✓		✓	✓	✓
Store labelled stocks for safe and efficient retrieval	✓		✓	✓	✓		✓
Inform appropriate personnel of impending stock shortages to maintain continuity of supply	✓	✓		✓	✓	✓	✓
<b>4. Maintain a safe work environment</b>							
Participate in OHS activities within scope of responsibilities	✓	✓	✓	✓	✓	✓	✓
Use established safe work practices and PPE to ensure personal safety and that of other personnel			✓	✓	✓	✓	✓
Report potential hazards and/or maintenance issues in own work area to designated personnel	✓	✓	✓		✓		✓
Minimise the generation of waste and environmental impacts	✓	✓	✓	✓		✓	
Dispose of waste in accordance with workplace procedures, relevant codes and regulations	✓		✓	✓	✓	✓	✓
<b>5. Follow incident and emergency response procedures</b>							

Identify incident and emergency situations	✓		✓	✓	✓		✓
Report and record incident and emergency situations according to workplace procedures	✓	✓		✓	✓	✓	
Follow incident and emergency procedures as appropriate to the nature of emergency using emergency equipment according to workplace procedures	✓		✓		✓		✓
<b>6. Determine Occupational Health and Safety (OH&amp;S) issues relating to immediate work environment</b>							
Occupational Health and Safety issues in the immediate workplace are assessed and action to rectify the problem is taken or reported to supervisor	✓	✓	✓	✓	✓	✓	✓
Understand the aspects of First aid	✓		✓	✓			✓
Understand the aspects of Fire Respond	✓	✓	✓	✓		✓	✓
Workplace and OH&S procedures are followed to ensure safe working environment	✓	✓		✓	✓	✓	
Occupational Health and Safety documents are provided to all work stations, this should include a list of personal safety items based on the line of work	✓	✓	✓		✓	✓	✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

## 1. Written questions

#	Questions	Answers
1	Why is it important to keep the work area clean?	A messy workshop hampers productivity, can be extremely hazardous and could cause long term health and safety problems.
2	Name three equipment that are used to clean the workshop area.	<ul style="list-style-type: none"> <li>• Pressure cleaners</li> <li>• Sweepers</li> <li>• Vacuum cleaners</li> </ul>
3	What is a polisher used for?	A polisher is used to turn a dirty hard floor to a brand new in a timely fashion
4	How should hazardous waste be stored?	It should be stored under cover and in a bunded and secure area, or in an underground tank.
5	What is stock checking?	Stock checking, is the systematic process of checking the quantity of the inventory.
6	Why is it important to label stocks?	Stock items need to be properly labelled for easy retrieval as confusions may arise if the labels are not properly undertaken.
7	Name 3 key points of ladder safety	<ul style="list-style-type: none"> <li>• the ladder should be checked for safety and for visible signs of damage each time it is used – if in any doubt the ladder should not be used</li> <li>• care must be taken when transporting the ladder around site and when erecting it</li> <li>• the ladder must only be used on firm, level ground</li> </ul>
8	What are the categories for hazardous substances?	<ol style="list-style-type: none"> <li>1. toxic</li> <li>2. harmful</li> <li>3. corrosive</li> <li>4. irritant</li> <li>5. extremely flammable</li> <li>6. oxidizing</li> </ol>
9	Why is PPE worn?	To minimize exposure to hazards that cause serious workplace injuries and illnesses
10	Name 3 equipment's used for eye protection	<ol style="list-style-type: none"> <li>1. Safety glasses</li> <li>2. Safety goggles</li> <li>3. Welding goggles</li> </ol>
11	What is the reporting procedure when an accident occurs in workplace?	If an accident occurs, an employee may be required to complete an accident report form; this should preferably be completed by the injured employee as soon after the accident as possible. If it is completed by a third party, then the employee must carefully check that the details are a clear identification of the events that took place, as once signed, an accident report could be used in legal proceedings
12	What is Workplace health and safety?	Safety of workers (also known as worker safety and occupational health and safety) refers to the provision of a safe working environment, safe equipment, policies, and procedures in order to ensure workers' health and safety.

13	What are the classes of Fire?	<ol style="list-style-type: none"> <li>1. Class A - fires involving solid materials, extinguished by water</li> <li>2. Class B – fires involving flammable liquids, extinguished by foam or carbon dioxide</li> <li>3. Class C – fires involving flammable gases, extinguished by dry powder</li> <li>4. Class D – fires involving flammable metals, extinguished by dry powder.</li> </ol>
14	Name 3 types of fire extinguisher	<ul style="list-style-type: none"> <li>• Water</li> <li>• Foam</li> <li>• Carbon dioxide</li> </ul>

## 2. PT=Practical Test

#	Questions	Answers
1	Follow incident and emergency response procedures	<p>Every student is expected to identify incident and emergency situation presented to them. Identify and analyze the risk, and consider potential consequences in terms of exposure and hazard and likelihood of each</p> <p>The students must be able to follow incident and emergency procedures as appropriate to the nature of emergency using emergency equipment.</p>
2	Demonstrate the basic aspects of First aid	<p>Students must identify the requirements for providing first aid and understands the typical contents of a first aid kit.</p> <p>Students are able distinguish the different treatments for electrical shock, treatments for burns, dealing with broken bones, treatment for foreign bodies in the eye.</p>
3	Demonstrate the basic aspects of Fire Respond	<p>Students understands different classes of fire and firefighting equipment's</p> <p>The students are able to take appropriate actions in the event of a fire.</p> <ul style="list-style-type: none"> <li>• Fire escape routes from the building</li> <li>• The location of designated safe fire assembly points</li> <li>• Raise the fire alarm</li> <li>• Leave by nearest exit</li> <li>• Ensure the emergency service is summoned</li> </ul>

### 3. OW = Observation at work Place

#	Types of Skills	Techniques for validation
1	Scientific terminologies and technical details of sampling, testing, equipment and instrumentation	<ul style="list-style-type: none"> <li>✓ Accuracy of the information shared</li> <li>✓ Relevancy of the information</li> <li>✓ Application of different knowledge to relevant situations</li> </ul>
2	Principles of small – scale budgeting, operational planning and efficient resource use	<ul style="list-style-type: none"> <li>✓ Accuracy of the information shared</li> <li>✓ Relevancy of the information</li> <li>✓ Application of different knowledge to relevant situations</li> </ul>
3	Career Awareness	<ul style="list-style-type: none"> <li>✓ From the information shared, validate the presenter is aware of the different career opportunities available across the Water Sanitation sector of the Maldives</li> </ul>

### 4. OQ=Oral Questioning

#	Types of Skills	Techniques for validation
1	Clean work preparation areas	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Clean preparation areas using appropriate cleaning agents and equipment according to workplace procedures</li> <li>✓ Remove spillages using appropriate agents, personal protective equipment (PPE) and workplace procedures</li> <li>✓ Collect and segregate wastes in accordance with workplace procedures, relevant codes and regulations</li> </ul>
2	Clean and store equipment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Collect used equipment, inspect for faults and, where necessary, remove from service</li> <li>✓ Use appropriate agents, apparatus and techniques to clean equipment</li> <li>✓ Store clean equipment in the designated locations and manner</li> </ul>
3	Monitor stocks of materials and equipment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Perform stock checks and maintain records of usage as directed</li> <li>✓ Store labelled stocks for safe and efficient retrieval</li> <li>✓ Inform appropriate personnel of impending stock shortages to maintain continuity of supply</li> </ul>
4	Maintain a safe work environment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Participate in OHS activities within scope of responsibilities</li> <li>✓ Use established safe work practices and PPE to ensure personal safety and that of other personnel</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Report potential hazards and/or maintenance issues in own work area to designated personnel</li> <li>✓ Minimise the generation of waste and environmental impacts</li> <li>✓ Dispose of waste in accordance with workplace procedures, relevant codes and regulations</li> </ul>
5	Follow incident and emergency response procedures	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify incident and emergency situations</li> <li>✓ Report and record incident and emergency situations according to workplace procedures</li> <li>✓ Follow incident and emergency procedures as appropriate to the nature of emergency using emergency equipment according to workplace procedures</li> </ul>
6	Determine Occupational Health and Safety (OH&S) issues relating to immediate work environment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Occupational Health and Safety issues in the immediate workplace are assessed and action to rectify the problem is taken or reported to supervisor</li> <li>✓ Understand the aspects of First aid</li> <li>✓ Understand the aspects of Fire Respond</li> <li>✓ Workplace and OH&amp;S procedures are followed to ensure safe working environment</li> <li>✓ Occupational Health and Safety documents are provided to all work stations, this should include a list of personal safety items based on the line of work.</li> </ul>

## 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.

		Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.
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## Unit-2: Apply work ethics and optimize professionalism

Unit No	02
Unit Title	Apply work ethics and optimize professionalism
Unit Code	CONCM01V2/20

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Define the purpose of work</b>							
One's unique sense of purpose for working and the whys of work are identified, reflected on and clearly defined for one's development as a person and as a member of society.	✓	✓		✓	✓	✓	
Personal mission is in harmony with company's values.	✓		✓	✓	✓		✓
<b>2. Apply work values/ethics</b>							
Work values/ethics/concepts are identified and classified in accordance with companies' ethical standard guidelines.	✓			✓	✓		✓
Work policies are undertaken in accordance with company's policies, guidelines on work ethical standard.	✓	✓	✓	✓	✓	✓	✓
Resources are used in accordance with company's policies and guidelines.	✓	✓	✓		✓	✓	
Punctuality, absence from work, sick, family and annual leave is maintained alignment to the Employment Act of the Maldives		✓		✓	✓		✓
<b>3. Deal with ethical problems</b>							
Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior are followed.	✓	✓	✓	✓		✓	✓
Work incidents/situations are reported according to company protocol/guidelines.	✓	✓	✓	✓	✓	✓	✓
Resolution and/or referral of ethical problems identified are reported/documented based on standard operating procedure	✓		✓	✓	✓		✓
<b>4. Maintain integrity of conduct in the workplace</b>							
Personal behavior and relationships with co-workers and/or clients are demonstrated consistent with ethical standards, policy and guidelines.	✓	✓	✓	✓	✓	✓	✓

Work practices are satisfactorily demonstrated and consistent with industry work ethical standards, organizational policy and guidelines.	✓	✓	✓	✓		✓	
Instructions to co-workers are provided based on ethical lawful and reasonable directives	✓	✓		✓	✓	✓	✓
<b>5. Contribute to workplace efficiency and delivery of quality service</b>							
Prioritize work load according to level of responsibility	✓	✓	✓	✓	✓	✓	✓
Advise supervisor if additional resources or support are required to improve performance	✓	✓		✓	✓		✓
Undertake duties in a positive manner to enhance workplace cooperation and efficiency	✓	✓	✓		✓	✓	
Monitor and adjust work practices to ensure that quality of outputs is maintained	✓	✓	✓	✓		✓	✓
Identify and report opportunities for improvements in procedures, processes and equipment in work area	✓	✓	✓	✓		✓	✓

**Note:**

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

## 1. Written questions

#	Question	Answer
1	Define work ethics and professionalism.	The capacity to demonstrate personal accountability and effective work habits, such as punctuality, working productively with others, and time workload management, and understand the impact of non-verbal communication on professional work image.
2	Identify four work values/ethics	<ol style="list-style-type: none"> <li>1. Reliability</li> <li>2. Dedication</li> <li>3. Discipline</li> <li>4. Productivity</li> <li>5. Cooperation</li> <li>6. Integrity</li> <li>7. Responsibility</li> <li>8. Professionalism</li> </ol>
3	Briefly explain four work values/ethics.	<p><b>Reliability</b> Employees with a strong work ethic are very reliable. You can expect these individuals to be on time for shifts and meetings. They meet their deadlines and offer quality work. A reliable coworker makes an excellent teammate because they contribute fairly to projects.</p> <p><b>Dedication</b> Part of a good work ethic is commitment and dedication to the job. They know how to focus on tasks without being distracted. These employees usually work until they finish their duties. They stay with one company for long periods of time.</p> <p><b>Discipline</b> Discipline is an essential part of showing a good work ethic. Highly disciplined employees show determination and commitment to the job. They strive to meet or exceed expectations and seek opportunities to learn new skills and improve their performance.</p> <p><b>Productivity</b> A strong work ethic translates to outstanding productivity. Productive employees often have a higher output than their counterparts. They complete projects early and do more than the minimum requirements.</p> <p><b>Cooperation</b> A good work ethic is something that employees often spread to those around them by cooperating willingly on projects. They show good teamwork and readily assist others when needed.</p>
4	What are some techniques to improve work values/ethic skills?	<ol style="list-style-type: none"> <li>1. Act as an ambassador of the company</li> <li>2. Prioritize your professional responsibilities</li> <li>3. Seek professional development</li> <li>4. Review your work</li> <li>5. Show respect to others</li> </ol>
5	Briefly explain some techniques that can be used to improve	<p><b>Act as an ambassador of the company</b> Maintain a positive attitude toward the company in both professional and personal interactions. Seek ways to further the</p>

	work values/ethic skills.	<p>business even if they're outside the scope of your job. For example, a finance professional may pass a potential lead along to a sales representative.</p> <p><b>Prioritize your professional responsibilities</b> Maintain good attendance, return promptly from lunch and arrive for meetings early. Strive to make personal appointments that don't interfere with your work schedule and only take personal calls on your cell phone when you're at lunch.</p> <p><b>Seek professional development</b> Independently seek ways to improve your work performance, such as taking night classes, attending weekend seminars or reading industry publications.</p> <p><b>Review your work</b> Submit thorough work that you have double-checked for quality and consistency. Manage your time properly so you can deliver projects early and give each task the time and attention it requires.</p> <p><b>Show respect to others</b> Speak politely to and about others in the workplace. Keep your interactions professional to show your respect for others.</p>
6	Identify five common ethical problems.	<ol style="list-style-type: none"> <li>1. Unethical leadership</li> <li>2. Toxic workplace culture</li> <li>3. Discrimination and harassment</li> <li>4. Unrealistic and conflicting goals</li> <li>5. Questionable use of company technology</li> <li>6. Too frequent coffee or cigarette breaks</li> </ol>
7	Briefly explain three common ethical problems.	<p><b>Unethical leadership</b> Having a personal issue with your boss is one thing, but reporting to a person who is behaving unethically is another. This may come in an obvious form, like manipulating numbers in a report or spending company money on inappropriate activities; however, it can also occur more subtly, in the form of bullying, accepting inappropriate gifts from suppliers, or asking you to skip a standard procedure just once.</p> <p><b>Toxic workplace culture</b> Organizations helmed by unethical leadership are more often than not plagued by a toxic workplace culture. Leaders who think nothing of taking bribes, manipulating sales figures and data or pressuring employees or business associates for "favors" (whether they be personal or financial), will think nothing of disrespecting and bullying their employees. With the current emphasis in many organizations to hire for "cultural fit," a toxic culture can be exacerbated by continually repopulating the company with like-minded personalities and toxic mentalities.</p> <p><b>Discrimination and harassment</b> Laws require organizations to be equal employment opportunity employers. Organizations must recruit a diverse workforce, enforce policies and training that support an equal opportunity program, and foster an environment that is respectful of all types of people. Unfortunately, there are still many whose practices</p>

		<p>break with existing guidelines. When discrimination and harassment of employees based on race, ethnicity, gender, disability or age occurs, not only has an ethical line been crossed but a legal one as well.</p> <p><b>Unrealistic and conflicting goals</b> Your organization sets a goal—it could be a monthly sales figure or product production number—that seems unrealistic, even unattainable. While not unethical in and of itself (after all, having driven leadership with aggressive company goals is crucial to innovation and growth), it’s how employees, and even some leaders, go about reaching the goal that could raise an ethical red flag. Unrealistic objectives can spur leaders to put undue pressure on their employees, and employees may consider cutting corners or breaching ethical or legal guidelines to obtain them. Cutting corners ethically is a shortcut that rarely pays off, and if your entire team or department is failing to meet goals, company leadership needs that feedback to revisit those goals and re-evaluate performance expectations.</p>
8	Briefly explain three methods on dealing with ethical issues at workplaces.	<p><b>Gather as much information as possible</b> Before taking action to solve an ethical issue, we need to have thorough understanding of that issue as possible. The problem may not be as straightforward as it first appears and it is important to gather enough information to determine what’s going on. Gather all relevant facts concerning the issue at hand, and ensure we are not making assumptions. Everyone has their own personal and professional biases. Some of those biases are grounded in experience, but with limited facts or information, it could be skewed to perspectives and be lacking reality.</p> <p><b>Identify the parties involved</b> Identify the parties involved and determine who else is involved in this issue. Involvement can be direct or indirect and on a direct level, those participating in the ethical violation are certainly involved. On an indirect level, those who will be impacted regardless of having no say in the issue are also involved. Among others, this can include coworkers, customers, and stockholders. It is important to determine who, among those involved. While fixing the issue, ensure the case is within your scope of duty and if not refer to the relevant seniors within the organization.</p> <p><b>Pinpoint the ethical issues involved</b> Instead of settling for a general sense that something is wrong, you need to ask yourself which ethical principles are being abused. Some ethical violations are more obvious than others. For instance, if you caught a coworker stealing expensive equipment, you could make the clear distinction that theft is wrong. In situations dealing with small violations or interdepartmental strife, though, the violation may not be as clear. Review the circumstances again and ask yourself which fundamental principle is affected. Possible options include violations of power, integrity, honesty, objectivity, professional competence, confidentiality, or fairness.</p>

		<p><b>Review the company's standard procedure</b> Find out if your company currently has an internal system set up for dealing with ethical issues like this. If you have a company manual or similar documentation, review it now. Look into the organization's policies concerning workplace ethics. Pay close attention to the chain of command. Find out who you should involve at which points, and the correct procedure for doing so. If the company doesn't have a set structure for dealing with ethical issues, you will need to determine who to go to using your own experience and understanding.</p> <p><b>List and evaluate your options</b> Think of every possible option available to you instead of settling for the most obvious. Write out each of these options and consider the impact each one might have. When evaluating your options, consider how each one fares in the light of your company's internal procedures, any external laws involved, and any general ethical values upheld by society as a whole. Predict the consequences that will result from each option. This includes both positive and negative outcomes. Understand that, in some circumstances, each option may come with both negative and positive consequences. Etc.</p>
9	Define professional integrity	Professional integrity is the practice of maintaining appropriate ethical behavior. It is the practice of showing strong adherence to moral and ethical principles and values such as honesty, honor, dependability and trustworthiness.
10	Identify three reasons for maintaining professional integrity.	<ul style="list-style-type: none"> <li>✓ Employee satisfaction</li> <li>✓ Reputation</li> <li>✓ Clearer focus</li> <li>✓ Stronger sales</li> </ul>
11	Briefly explain three reasons for maintaining professional integrity	<p><b>Employee satisfaction:</b> Employees are typically happier working for someone who they believe is trustworthy and dependable, someone who would never ask them to compromise their own principles. Integrity in a supervisor has been linked to job satisfaction and engagement, employee health and even life satisfaction.</p> <p><b>Reputation:</b> In order for people to trust you—both in- and outside of your organization—you need to behave with integrity. Investors need to trust you in order to consider investing in your business. Vendors need to trust that you will pay for goods and services. Maintaining professional integrity will allow you to build a strong reputation that will increase the trust and comfort others have in doing business with you</p> <p><b>Clearer focus:</b> Consistently behaving with professional integrity means you have the energy to focus on what is important rather than wasting energy covering up bad practice.</p>

		<p><b>Stronger sales:</b> Customers today are motivated to buy from companies that are socially and environmentally responsible. The most effective way to create a culture of integrity and ethical behavior is to behave with professional integrity.</p>
12	Identify the skills that should be developed when maintaining integrity in the workplace.	<ol style="list-style-type: none"> <li>1. Treat everyone the same</li> <li>2. Reward honesty</li> <li>3. Admit your mistakes</li> <li>4. Encourage teams to speak freely</li> <li>5. Conduct self-assessments</li> <li>6. Keep your commitments</li> <li>7. Put in maximum effort</li> </ol>
13	Briefly explain four skills that should be developed when maintaining integrity in the workplace.	<p><b>1. Treat everyone the same</b> Integrity is about honesty, wholeness and being the same person in all situations and with all people. Treat supervisors, coworkers and even the intern with the same level of professionalism and respect, regardless of their level of seniority. The same applies to customers. Every customer should be given the best treatment, regardless of the level of service they pay for.</p> <p><b>2. Reward honesty</b> Create a culture of integrity by encouraging others to be honest with you, even when they make costly mistakes. Reward honesty publicly and repeatedly until everyone on your team understands that it's always safe—and always the best idea—to be honest with you.</p> <p><b>3. Admit your mistakes</b> Everyone makes mistakes and no one, from customers to employees, expects everyone to be perfect all the time. The key to behaving with professional integrity is admitting mistakes and apologizing when you're wrong. You must also demonstrate your regret through your actions and demeanor. You'll generally find that not only do people not think less of you, they actually think more highly of you by your ability to admit error.</p> <p><b>4. Encourage teams to speak freely</b> Encourage your team to come up with fresh and creative approaches to everyday business challenges you encounter. Team discussions regarding new ideas should be honest and critical, yet respectful and open-minded of other perspectives. Encourage your team to speak freely as well as give and receive constructive criticism to improve ideas.</p> <p><b>5. Conduct self-assessments</b> Periodically evaluate whether you are behaving with professional integrity. Evaluate whether you are heavily influenced by stronger personalities, pressured by your boss or tempted by easy money. You could even ask a trusted coworker their objective viewpoint. Make a non-judgmental inventory of your own integrity and determine whether you need to take action based on potential areas of self-improvement. Etc.</p>

14	What are the three components of excellent service quality	<ol style="list-style-type: none"> <li>1. Great Service climate</li> <li>2. Service strategy</li> <li>3. Service Performance</li> </ol>
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## 2. PT=Practical Test

#	Activity	Assessment scope
1	<b>Presentation</b> on “Importance of Work and Plans for Career Development”	<p>Asses the presentation on the following.</p> <ul style="list-style-type: none"> <li>✓ Reason for work is explained</li> <li>✓ Proper knowledge of the career expressed</li> <li>✓ Plans for self-development and pathways for career advancement is explained</li> </ul>
2	<b>Role Play</b> on application of work values/ethic	<p>Asses the role play and observe the following</p> <ul style="list-style-type: none"> <li>✓ Participant understands the concepts related to work values and ethics</li> <li>✓ Reviewed roles of different occupations within company and explain good practices related to performing work</li> <li>✓ Revisit the existing company policies and interpreted meaning of these policies including Do’s and Do Nots of these policies</li> <li>✓ Interpret good employee attributes related to handling of punctuality, absence from work, sick, family and annual leave</li> </ul>
3	<b>Assignment</b> focused on managing an ethical problem within the workplace with steps to manage the problem with application of integrity.	<p>Students will be given assignment where they will be asked to identify and select an ongoing ethical problem, analyse it and detail the steps to manage the problem with applications of honesty and integrity within the workplaces.</p>

## 3. OW =Observation at work Place

#	Observation activity	Points to validate
1	<b>Presentation</b> on “Importance of Work and PlansforCareer Development”	<p>Use the presentation and assess the following</p> <ul style="list-style-type: none"> <li>✓ Purpose for working and the why’s of work are identified, reflected and linked to self-development</li> </ul>
2	<b>Role Play</b> on application of work values/ethic	<p>Observe the role play and validate if the students are aware of the following</p> <ul style="list-style-type: none"> <li>✓ Work policies are undertaken in accordance with company’s policies.</li> <li>✓ Resources are used in accordance with company’s policies and guidelines.</li> </ul>
3	<b>Assignment</b> focused on managing an ethical problem within the workplace with steps to	<p>Check the assignment and observe the following</p> <ul style="list-style-type: none"> <li>✓ Work incidents/situations are identified and reported according to company guidelines</li> <li>✓ Personal behavior and relationships with co- workers</li> </ul>

	manage the problem with application of integrity.	<p>and clients are within ethical standard</p> <ul style="list-style-type: none"> <li>✓ Work practices are maintained within ethical boundaries for sustained integrity at workplace.</li> </ul>
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#### 4. OQ=Oral Questioning

#	Questions	Validating Student Performance
1	Define the purpose of work	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ One's unique sense of purpose for working and the whys of work are identified, reflected on and clearly defined for one's development as a person and as a member of society.</li> <li>✓ Personal mission is in harmony with company's values.</li> </ul>
2	Apply work values/ethics	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Work values/ethics/concepts are identified and classified in accordance with companies' ethical standard guidelines.</li> <li>✓ Work policies are undertaken in accordance with company's policies, guidelines on work ethical standard.</li> <li>✓ Resources are used in accordance with company's policies and guidelines.</li> <li>✓ Punctuality, absence from work, sick, family and annual leave is maintained alignment to the Employment Act of the Maldives</li> </ul>
3	Deal with ethical problems	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Company ethical standards, organizational policy and guidelines on the prevention and reporting of unethical conduct/behavior are followed.</li> <li>✓ Work incidents/situations are reported according to company protocol/guidelines.</li> <li>✓ Resolution and/or referral of ethical problems identified are reported/documentated based on standard operating procedure</li> </ul>
4	Maintain integrity of conduct in the workplace	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Personal behavior and relationships with coworkers and/or clients are demonstrated consistent with ethical standards, policy and guidelines</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Work practices are satisfactorily demonstrated and consistent with industry work ethical standards, organizational policy and guidelines.</li> <li>✓ Instructions to co-workers are provided based on ethical lawful and reasonable directives</li> </ul>
5	Contribute to workplace efficiency and delivery of quality service	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Prioritize work load according to level of responsibility</li> <li>✓ Advise supervisor if additional resources or 15 support are required to improve performance</li> <li>✓ Undertake duties in a positive manner to enhance workplace cooperation and efficiency</li> <li>✓ Monitor and adjust work practices to ensure that quality of outputs is maintained</li> <li>✓ Identify and report opportunities for improvements in procedures, processes and equipment in work area</li> </ul>

#### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies, FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-3: Practice effective workplace communication

Unit No	03
Unit Title	Practice effective workplace communication
Unit Code	CONCM05V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Communicate with customers and colleagues</b>							
Proper channels and methods of communication used	✓	✓	✓	✓		✓	✓
Workplace interactions with customers and colleagues appropriately made	✓	✓	✓		✓	✓	✓
Appropriate non-verbal communication used	✓	✓		✓	✓	✓	
Appropriate lines of communication followed	✓	✓	✓	✓	✓		✓
<b>2. Speak English and Dhivehi at an operational level</b>							
Workplace interactions with colleagues appropriately made	✓	✓	✓	✓		✓	✓
Verbal instructions or requests are responded to at an operational level	✓	✓	✓		✓	✓	✓
Appropriate non-verbal communication used	✓	✓		✓	✓	✓	
Simple requests are made	✓	✓	✓	✓		✓	✓
Routine procedures are described	✓	✓	✓		✓	✓	✓
Different forms of expression in English and Dhivehi is identified and used as appropriate	✓	✓		✓	✓	✓	
<b>3.Participate in workplace meetings and discussions</b>							
Meetings and discussions attended on time	✓	✓	✓	✓		✓	✓
Procedures to expressing opinions and following instructions clearly followed	✓	✓	✓		✓	✓	✓
Questions asked and responded to effectively	✓	✓		✓	✓	✓	
Meeting and discussion outcomes interpreted and implemented correctly	✓	✓	✓	✓		✓	✓
<b>4.Handle relevant work-related documentation</b>							
Conditions of employment are clear and understood properly	✓	✓	✓	✓		✓	✓
Relevant information accessed from appropriate sources	✓	✓	✓		✓	✓	✓
Relevant data on workplace forms and other documents filled correctly	✓	✓		✓	✓	✓	

Instructions and guidelines understood and followed properly	✓	✓	✓	✓		✓	✓
Reporting requirements completed properly		✓	✓		✓		
<b>5.Manage workplace calls and messages</b>							
Operate workplace phones	✓	✓	✓	✓		✓	✓
Attend and manage phone calls	✓	✓	✓		✓	✓	✓
Read and respond to texts and messages	✓	✓		✓	✓	✓	
Perform communication in both English and Dhivehi	✓	✓	✓	✓		✓	✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

## 1. Written questions

	Question	Answer
1	Define communication.	Communication is the process of transmitting information and common understanding from one person to another.
2	Define communication channels.	Communication channels are the means through which people in an organization communicate and interact with each other.
3	Identify the types of communication channels.	<ol style="list-style-type: none"> <li>1. Communication channels by formality</li> <li>2. Communication channels by means of communication</li> </ol>
4	What are the three different communication channels based on formality?	<ol style="list-style-type: none"> <li>1. Formal communication channels</li> <li>2. Information communication channels</li> <li>3. Unofficial communication channels</li> </ol>
5	Briefly explain the three different communication channels based on formality.	<p><b>1. Formal communication channels</b> Formal communication includes exchange of information such as the goals, policies and procedures of an organization. Some of the most common examples of formal communication include company business plans, strategy, goals, annual reports, agreements, company-wide communications, workplace safety guidelines and procedures, board presentations etc.</p> <p><b>2. Information communication channels</b> Informal communication channels are also used to deliver official business messages but in a more relaxed way. Some examples of informal communication include conversations at work addressing various issues that team members may have, lunch time conversations and continuous collaboration among team members.</p> <p><b>3. Unofficial communication channels</b> In addition to official communication channels, there is also an unofficial mode of communication that is quite common in the workplace. Unofficial communication includes employee communication outside of work environment on topics not related to work.</p>
6	What does it mean to divide communication channels by mean?	Dividing channels by the way and tools employees use to communicate with each other.
7	What are the three types of main means of communication in the workplace?	<ol style="list-style-type: none"> <li>1. Digital communication channels</li> <li>2. Face-to-face communication</li> <li>3. Written communication</li> </ol>
8	Briefly explain the three types of main means of communication in the workplace.	<p><b>1. Digital communication channels</b> Electronic means of communication include various online tools that employees use to stay connected with each other and keep up with the company news and updates. Today, digital communication channels are the most popular and most used channels in the workplace. Some of the examples include email, internal communication platforms, employee collaboration software and intranets.</p> <p><b>2. Face-to-face communication</b></p>

		<p>Even though electronic means of conversation in the workplace are taking over, face-to-face communication is still extremely important. This mean is much more personal, and it has more human touch into it.</p> <p><b>3. Written communication</b></p> <p>This type of communication is almost completely dead within organizations. However, written communication is still necessary when important policies, letters, memos, manuals, notices and announcements are being communicated to the employees.</p>
9	Identify some basic rules of building social relationships.	<ul style="list-style-type: none"> <li>• Identify the presence of your classmates</li> <li>• Work with the conversation</li> <li>• Share a bit of yourself</li> <li>• Empathy</li> <li>• Active listening</li> </ul>
10	Briefly explain some basic rules of building social relationships.	<ul style="list-style-type: none"> <li>• <b>Identify the presence of your classmates</b></li> </ul> <p>We mean to greet or recognize the other person who is close to you. A smile or a look is enough to show that you have seen that person, basically nothing but good education.</p> <ul style="list-style-type: none"> <li>• <b>Work with the conversation</b></li> </ul> <p>Starting the conversation yourself by telling your own experiences or asking the other person about your life is a good way to improve social relationships. In this way you will demonstrate your inclination to know that person more. By finding something that interests you or that you have in common, you will be creating the basis for future interactions. Do not forget to observe the details and focus on them, but always avoiding judging.</p> <ul style="list-style-type: none"> <li>• <b>Share a bit of yourself</b></li> </ul> <p>A conversation is not only based on asking and listening, it is an interaction between two people, in which both can and should contribute their views. In this way, we must try not to fall into an “interrogation” and reveal our own feelings and opinions at the same time, since this will allow us to see our own perspective and create a true connection.</p> <ul style="list-style-type: none"> <li>• <b>Empathy</b></li> </ul> <p>It is the basic quality to develop when interacting with other people and that can be demonstrated in different ways. We refer to the ability to put ourselves in the place of the other person, and show a real interest in connecting with them. This desire is also demonstrated through our body gestures and facial expressions; such as smiling or bowing are examples of nonverbal language that convey an idea of attention for what the other person expresses.</p> <p>Etc.</p>
11	Briefly describe five ways of nonverbal communication used in the workplace.	<ul style="list-style-type: none"> <li>• <b>Supports your message.</b></li> </ul> <p>When having a conversation, participating in a meeting or engaging in conversation, nonverbal cues can emphasize and underscore the content of your message. For example, using hand gestures to indicate the importance of an idea may tell your listeners to pay attention to and remember a key point.</p>

		<ul style="list-style-type: none"> <li>• <b>Communicates messages.</b> You may also use nonverbal communication completely to communicate with others. For example, if someone is explaining a sentiment you admire and agree with, you might nod your head up and down to express solidarity.</li> <li>• <b>Communicates intention.</b> Your body language may also intentionally or unintentionally express your current condition. For example, people may pick up nonverbal cues that you are being dishonest, unengaged, excited or aggressive.</li> <li>• <b>Conveys feelings.</b> You can also use nonverbal communication to show your feelings, such as disappointment, relief, happiness, contentment and more.</li> <li>• <b>Offers support.</b> Nonverbal cues are also a great way to show support. Whether it's a simple smile or pat on the back, action may speak louder than words in many cases. Etc.</li> </ul>
12	Briefly describe three tips to keep in mind when making a simple request.	<ul style="list-style-type: none"> <li>• <b>Don't demand</b> People always resent being ordered around so make sure to avoid using imperatives when making requests. Saying, "Give me some time off" will never please your boss. Instead, start your request politely, for example, "I'd like to request some annual leave" or "I'd appreciate it if you could give me your feedback".</li> <li>• <b>Eliminate "I need"</b> Always talking about what you "need" can make you sound bossy and offensive because it shows that you think your needs are more important than other people's. Use questions like "Could you please...?" and "Would you be able to...?" to sound more considerate and polite.</li> <li>• <b>Avoid assumption</b> Even if you have an understanding boss, it's best not to make assumptions about being allowed to do certain things. If you want to leave early, it's much better to say "Would it be OK if I slipped out a bit early today?" than "I'm going to leave a bit early today". Think of the consequences of your request and what you will do to make up for any inconvenience caused. For example, if you need to leave a little early, explain when you will make up for the work you've missed.</li> <li>• <b>Steer clear of accusations</b> If your manager seems to have forgotten about your request, don't accuse him or her of not doing the work by saying, "Where are those figures I asked for?" For a simple yet effective reminder, just say, for example, "I was wondering if you've had the chance to calculate those figures." It's a non-threatening way to remind your boss of something he or she promised to do. Etc.</li> </ul>
13	Identify and briefly explain the pre-	<ol style="list-style-type: none"> <li><b>1. A clearly defined purpose for the meeting</b></li> </ol>

	<p>requisites for a successful meeting,</p>	<p>a</p> <p>Ask questions such as; Why are we meeting? What are we trying to achieve? Are we meeting for meetings sake? However, consider that at times the purpose of bringing people together for a meeting may be to achieve other important interpersonal objectives like team building, brain storming or group problem solving. Make sure that you clearly communicate the meeting purpose well before hand, this gives attendees time to gather ideas or research issues prior to attending the meeting.</p> <p><b>2. Advise people of the meeting in time for them to be able to attend</b></p> <p>It is amazing how often key people are left out of meetings or are not able to attend simply due to a lack of planning and sufficient notice.</p> <p><b>3. Set an agenda</b></p> <p>An agenda aims to keep discussions on track and to keep everyone focussed on the issues. The agenda should be distributed to attendees before the meeting.</p> <p><b>4. Start and finish on time</b></p> <p>Make sure the meeting starts and finishes on time so participants feel that their time is valued and that they can plan for effective meeting participation to fit within their work load.</p> <p><b>5. Manage the participants</b></p> <p>It is important that every person feels their attendance and contribution is valued. People must be given the opportunity to express their opinion as well as recognising they must also listen to others without interruption. Clear conflict management strategies must be in place.</p>
14	<p>Identify five common workplace documents.</p>	<ol style="list-style-type: none"> <li>1. Registration and Permit Certificates</li> <li>2. Lease Contracts</li> <li>3. Employment Contracts, Appraisal reports</li> <li>4. Warranty and Insurance Certificates</li> <li>5. Memorandum of Understanding (MOUs)</li> <li>6. Memos, Policies, Letters, Meeting Minutes</li> <li>7. Financial Records</li> <li>8. Inventory Records</li> </ol>
15	<p>Briefly explain five common workplace documents.</p>	<p><b>1. Registration and Permit Certificates</b></p> <p>Whether it's a company or Sole Proprietorship, relevant registration certificates need to be carefully stored and kept as referred registration certificates may need to be produced for different purposes.</p> <p><b>2. Lease Contracts</b></p> <p>Companies big or small may have several lease contracts involving lease of the office space, equipment or land. Such lease contracts need to be properly managed and stored to ensure lease terms and other contractual terms are properly managed and implemented.</p> <p><b>3. Employment Contracts, Appraisal reports</b></p> <p>This contract sets and the appraisal reports need to be stored in order to minimize future disputes. Not every hire requires an employment agreement, but the document can be a useful if you want to dissuade certain new hires from leaving your</p>

		<p>company too soon, disclosing confidential information about your business, or going to work at a competitor. The contract should be reviewed by an experienced employment expert before given to an employee to sign.</p> <p><b>4. Warranty and Insurance Certificates</b></p> <p>Companies often procure expensive items that becomes part of their operational expenses and hence such equipment or tools may play a crucial role in the survival or growth of the enterprises. For this purpose, it is important that the Warranty or Insurance Certificates be kept safe and accessible to ensure business operations remain smooth and healthy always.</p> <p><b>5. Memorandum of Understanding (MOUs)</b></p> <p>An MOU falls somewhere between a formal contract and a handshake. It documents any important conversations you have with suppliers, potential partners and others involved in the business. MOUs are great ways to lay out the terms of a project or relationship in writing, but do not rely on the document to be legally binding Etc.</p>
16	Identify three methods of managing workplace documents.	<ol style="list-style-type: none"> <li>1. Re-organize your workspace</li> <li>2. Get filing</li> <li>3. Label clearly</li> <li>4. Sort out loose documents</li> <li>5. Use storage boxes</li> <li>6. Use a digital filing system</li> </ol>
17	Briefly explain three methods of managing workplace documents.	<p><b>1. Re-organize your workspace</b></p> <p>Take the time to go through your existing files and documents, and sort out which documents are important enough to be kept on file, and which ones need to be shredded. Any duplicates can be thrown away, and anything you haven't used in the last 6 months can be put into recycling. Be sure to clear out any drawers and filing cabinets so you can start from scratch and organize a system that works for everyone</p> <p><b>2. Get filing</b></p> <p>There's good reason why filing cabinets are one of the most common forms of storage for documents, in the home and in the office. Broad headings will help to decrease filing time. However, you might want to consider adding subheadings to the more generalized folders to prevent cluttering and allow for easy finds</p> <p><b>3. Label clearly</b></p> <p>This is vital to keeping your filing system organized and free of accidental category mixing. Document folders can be labelled in order of topic and purpose. Dates are also good to include within the subcategories. Alphabetically ordering files is another popular way of organizing documents. While organizing things alphabetically is a good idea, many organizers recommend keeping an index of all the document folder names, allowing you to keep track of added categories.</p> <p><b>4. Sort out loose documents</b></p> <p>Some offices have baskets for documents that need to be filed or shredded. In order to keep on top of everything, it's best to</p>

		get onto these documents as soon as you can to avoid piling up. Make sure you go through your 'to-file' basket carefully and filter out any documents you won't need in the immediate future, as well as duplicates. Etc.
18	What is bookkeeping?	Bookkeeping is the process of recording company's financial transactions into organized accounts on a daily basis.
19	Why bookkeeping is considered an essential part of accounting process?	When you keep transaction records updated, it can generate accurate financial reports that help measure business performance. Detailed records will also be handy in the event of a tax audit.
20	Identify three methods of bookkeeping.	<ol style="list-style-type: none"> <li>1. Single-entry bookkeeping</li> <li>2. Double-entry bookkeeping</li> <li>3. Cash-based or accrual-based</li> </ol>
21	Briefly explain three methods of bookkeeping.	<p><b>1. Single-entry bookkeeping</b> Single-entry bookkeeping is a straightforward method where one entry is made for each transaction in your books. These transactions are usually maintained in a cash book to track incoming revenue and outgoing expenses. You do not need formal accounting training for the single-entry system. The single-entry method will suit small private companies and sole proprietorships.</p> <p><b>2. Double-entry bookkeeping</b> Double-entry bookkeeping is more robust. It follows the principle that every transaction affects at least two accounts, and they are recorded as debits and credits. For example, if you make a sale for \$10, your cash account will be debited for \$10 and your sales account will be credited by the same amount. In the double-entry system, the total credits must always equal the total debits. When this happens, your books are "balanced."</p> <p><b>3. Cash-based or accrual-based</b> The next step is choosing between a cash or accrual basis for your bookkeeping. This decision will depend on when your business recognizes its revenue and expenses. In cashbased, you recognize revenue when you receive cash into your business. Expenses are recognized when they are paid for. In other words, any time cash enters or exits your accounts, they are recognized in the books. In the accrual method, revenue is recognized when it is earned. Similarly, expenses are recorded when they are incurred, usually along with corresponding revenues. The actual cash does not have to enter or exit for the transaction to be recorded.</p>
22	Identify four methods of recording transactions.	<ol style="list-style-type: none"> <li>1. Cash registers</li> <li>2. The journal</li> <li>3. The ledger</li> <li>4. Trial balance</li> </ol>
23	Briefly explain four methods of recording transactions.	<p><b>1. Cash registers</b> A cash register is an electronic machine that is used to calculate and register transactions. Usually, cash registers are used to record cash flow in stores. The cashier collects the cash for a sale and returns a balance amount to the customer. Both the collected cash and balance returned are recorded in the</p>

	<p>register as single-entry cash accounts. Cash registers also store transaction receipts, so you can easily record them in your sales journal. Cash registers are commonly found in businesses of all sizes. However, they aren't usually the primary method of recording transactions because they use the single-entry, cash-based system of bookkeeping. This makes them convenient for very small businesses but too simplistic for enterprises.</p> <p><b>2. The journal</b></p> <p>The journal is called the book of original entry. It is the place where a business chronologically records its transactions for the first time. A journal can be either physical (in the form of a book or diary), or digital (stored as spreadsheets, or data in accounting software). It specifies the date of each transaction, the accounts credited or debited, and the amount involved. While the journal is not usually checked for balance at the end of the fiscal year, each journal entry affects the ledger. As we'll learn, it is imperative that the ledger is balanced, so keeping an accurate journal is a good habit to keep. This form is useful for double-entry bookkeeping.</p> <p><b>3. The ledger</b></p> <p>A ledger is a book or a compilation of accounts. It is also called the book of second entry. After you enter transactions in a journal, they are classified into separate accounts and then transferred into the ledger. These records are transcribed by accounts in the order: assets, liabilities, equity, income, and expenses. Like the journal, the ledger can also be physical or electronic spreadsheets.</p> <p>A ledger contains a chart of accounts, which is a list of all the names and number of accounts in the ledger. The chart usually occurs in the same order of accounts as the transcribed records.</p> <p>Unlike the journal, ledgers are investigated by auditors, so they must always be balanced at the end of the fiscal year. If the total debits are more than the total credits, it's called a debit balance. If the total credits outweigh the total debits, there is a credit balance. The ledger is important in double-entry bookkeeping where each transaction changes at least two sub-ledger accounts.</p> <p><b>4. Trial balance</b></p> <p>The trial balance is produced from the compiled and summarized ledger entries. The trial balance is like a test to see if your books are balanced. It lists the accounts exactly in the following order: assets, liabilities, equity, income, and expenses with the ending account balance.</p> <p>An accountant usually generates the trial balance to see where your business stands and how well your books are balanced. This can then be cross-checked against ledgers and journals. Imbalances between debits and credits are easy to spot on the trial balance. It is not always error-free, though. Any miscalculated or wrongly-transcribed journal entry in the ledger can cause an incorrect trial balance. It is best to look out</p>
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		for errors early, and correct them on the ledger instead of waiting for the trial balance at the end of the fiscal year.
24	What are the three major financial reports that every business must know?	<ol style="list-style-type: none"> <li>1. The cash flow statement</li> <li>2. The balance sheet</li> <li>3. The income statement</li> </ol>
25	Define bank reconciliation.	Bank reconciliation is the process of finding congruence between the transactions in your bank account and the transactions in your bookkeeping records.
26	What are the consequences of failing to answer the telephone promptly and correctly?	<ul style="list-style-type: none"> <li>• Loss of revenue</li> <li>• Loss of jobs</li> <li>• Poor or negative customer relations</li> <li>• Customers who are more difficult to deal with</li> <li>• Reduced business image in the eyes of the customer</li> </ul>
27	Identify four examples of appropriate telephone manner.	<ul style="list-style-type: none"> <li>• Using polite language at all times</li> <li>• Using appropriate welcoming or greeting phrases</li> <li>• Showing enthusiasm when taking a call</li> <li>• Being friendly</li> <li>• Making an offer of help to the caller</li> </ul>
28	What are five things you should keep in mind when recording and passing on messages?	<ul style="list-style-type: none"> <li>• Taking messages cheerfully</li> <li>• Using the designated telephone message form</li> <li>• Making sure you capture all the information the caller gives you</li> <li>• Ensuring you get the details correct</li> <li>• Repeating the message back to the caller to confirm it</li> <li>• Thanking the caller</li> </ul>
29	Identify three reasons why internal electronic systems are beneficial when taking telephone messages.	<ul style="list-style-type: none"> <li>• Facilitates recording of message</li> <li>• Saves time</li> <li>• Makes distribution of message easier</li> </ul>

## 2. PT=Practical Test

#	Practical Activity	Validating Techniques
1	List workplace functions and relevant documentations needed to complete workplace tasks.	While answering, make sure they correctly list the workplace functions, documentations needed and also explain where they can access these documentations. They also should explain their role in filling these documentations and where to get the relevant forms and also where to submit after filling them.
2	Ask students to write small paragraphs using both English and Dhivehi. Also examine their speaking competencies.	Check student test papers, assignments and validate if they have the competency to write in Dhivehi and English. Also check if they can speak in both Dhivehi and English.
3	Students participate in workplace meetings and discussions	Check if students have attended meetings and participated in workplace discussions. This can be validated by review role play exercises or meeting minutes that can be obtained at the time of assessment.

4	Complete work documents	Check if students have undertaken workplace documentations such as issuing receipts or filling up of forms such as leave forms etc. There can be different documentations that can be witnessed to ensure student competently attend workplace documentations.
5	Manage workplace calls and messages	Often calls and messages are linked to the work being performed across the workplaces. It is vital that student competency in making calls and messages be reviewed and validated through role plays or through recordings of previous messages and calls.

### 3. OW = Observation at work Place

#	Activities to be observed	Criteria to validate competency
1	Review all papers, assignments, log books and other relevant documents	Past papers, assignments, log books and other relevant documents can be reviewed to assess and evaluate the following competencies. <ul style="list-style-type: none"> <li>✓ Convey workplace information</li> <li>✓ Speak English and Dhivehi at an operational level</li> <li>✓ Complete relevant work-related documents</li> <li>✓ Manage workplace calls and messages</li> </ul>
2	Review the minutes of workplace meetings and discussions	By observing minutes of the meetings will illustrate how individual students have participated in the workplace meetings and discussions. Check for the ideas expressed by the individual students to assess and evaluate their performance.
3	Review already compiled workplace documentations	Every workplace has different sets of workplace documentations and by reviewing these documentations will help the assessor to assess and evaluate performance of individual students.
4	Review call and message logs	Review of the calls and messages log sheets will put light into the way how calls and messages are attended and managed by the students and can provide important evidence on the performance of the students within this respect area.

### 4. OQ=Oral Questioning

#	Oral questioning activities	Answers
1	Convey workplace information	Students can be asked to provide information related to different information sources and their respective locations within the workplaces. Answers from the students will help the assessor to evaluate competencies of the students in conveying workplace information.
2	Speak English and Dhivehi at an operational level	Assessor can verbally ask questions and on site ask them to write both Dhivehi and English. Their responses can be used to assess and evaluate their performance in the respective competency.
3	Complete relevant work-related documents	Student filled workplace documentations can be reviewed and oral questions can be asked to assess and make judgments on the competencies of the students.
4	Manage workplace calls and messages	Workplace calls and message log can be viewed and different oral questions can be asked to assess and evaluate performance of the students.

### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	TRB/LB =Trainee's Record/Log Book	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry

		the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-4: Perform computer operations

Unit No	04
Unit Title	Perform computer operations
Unit Code	CONCM03V2/20

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Start computer, system information and features</b>							
Adjust workspace, furniture and equipment to suit user ergonomic requirements	✓	✓	✓	✓		✓	✓
Ensure work organization meets organizational and occupational health and safety (OHS) requirements for computer operation	✓	✓	✓		✓	✓	✓
Start computer or log on according to user procedures	✓	✓		✓	✓	✓	
Identify basic functions and features using system information	✓	✓	✓	✓		✓	✓
Customize desktop configuration, if necessary, with assistance from appropriate persons	✓	✓	✓	✓		✓	✓
Use help functions as required	✓	✓	✓		✓	✓	✓
<b>2. Organize files using basic directory and folder structures</b>							
Create folders/subfolders with suitable names	✓	✓	✓	✓		✓	✓
Save files with suitable names in appropriate folders	✓	✓	✓		✓	✓	✓
Rename and move folders/subfolders and files as required	✓	✓		✓	✓	✓	
Identify folder/subfolder and file attributes	✓	✓	✓	✓		✓	✓
Move folders/subfolders and files using cut and paste, and drag and drop techniques	✓	✓	✓	✓		✓	✓
Save folders/subfolders and files to appropriate media where necessary	✓	✓	✓		✓	✓	✓
Search for folders/subfolders and files using appropriate software tools	✓	✓		✓	✓	✓	
Restore deleted folder/subfolders and files as necessary	✓	✓	✓	✓		✓	✓
<b>3. Print information</b>							
Print information from installed printer	✓	✓	✓	✓		✓	✓
View progress of print jobs and delete as required	✓	✓	✓		✓	✓	✓
Change default printer if installed and required	✓	✓		✓	✓	✓	

<b>4. Apply web browsing skills</b>							
Introduction to WWW	✓	✓	✓	✓		✓	✓
Acknowledge to gather relevant information from reliable sources	✓	✓	✓		✓	✓	✓
Use of search engines	✓	✓		✓	✓	✓	
Basic interaction of browser	✓	✓	✓	✓		✓	✓
Creating bookmarks in browser	✓	✓	✓	✓		✓	✓
Upload and download files	✓	✓	✓		✓	✓	✓
Navigation of hyperlink	✓	✓		✓	✓	✓	
<b>5. Shut down computer</b>							
Close all open applications	✓	✓	✓	✓		✓	✓
Shut-down computer according to user procedures	✓	✓	✓		✓	✓	✓
<b>6. Basic Microsoft Word and Excel skills</b>							
Ensure data is entered, checked and amended in accordance with organizational and task requirements, to maintain consistency of design and layout	✓	✓	✓	✓		✓	✓
Format spreadsheet using software functions; to adjust page and cell layout to meet information requirements, in accordance with organizational style and presentation requirements	✓	✓	✓		✓	✓	✓
Ensure formulae are used and tested to confirm output meets task requirements, in consultation with appropriate personnel as required	✓	✓		✓	✓	✓	
Use manuals, user documentation and online help to overcome problems with spreadsheet design and production	✓	✓	✓	✓		✓	✓
Format document using appropriate software functions to adjust page layout to meet information requirements, in accordance with organizational style and presentation requirements	✓	✓	✓	✓		✓	✓
Use system features to identify and manipulate screen display options and controls	✓	✓	✓		✓	✓	✓
Use manuals, user documentation and online help to overcome problems with document presentation and production	✓	✓		✓	✓	✓	

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

## 1. Written questions

	Question	Answer
1	How can you improve a good posture and prevent lower back pain?	<ol style="list-style-type: none"> <li>1. Adjust the chair height</li> <li>2. Ensure your feet are firmly on the floor</li> <li>3. Adjusting the chair angle</li> <li>4. Adjusting the backrest angle</li> <li>5. Setting the backrest height</li> <li>6. Positioning the armrest height</li> </ol>
2	Explain briefly one way to improve a good posture and prevent lower back pain?	<ol style="list-style-type: none"> <li>1. Positioning the armrest height <ul style="list-style-type: none"> <li>• If the armrest can be adjusted, position them so that they fit under the desk.</li> <li>• If you are taller than average, the above recommendations for adjusting your chair may not be suitable.</li> <li>• Consider an Adjustable Standing Desk or a Sit Stand Workstation to bring the desk to your level.</li> </ul> </li> </ol>
3	How can you correctly set up your workplace to improve posture and correct support?	<ul style="list-style-type: none"> <li>• Adjust the location of the keyboard to be 10-15cm in front of the edge of the desk.</li> <li>• The wrists should be straight and hovering over the desk.</li> <li>• The mouse should be as close as possible to the keyboard.</li> <li>• If you are using one monitor, position it directly in front. It should be an arm length away and angled slightly upward towards the eyes.</li> <li>• A document holder should be ideally positioned between the monitor and the keyboard.</li> <li>• Phone, calculators, and note-pads are all ideally positioned within easy reach.</li> </ul>
4	Does your workstation require a footrest, explain your answer?	Yes. When setting up an ergonomic workstation, ensuring your legs and feet are well supported is crucial. If your feet aren't firmly flat on the floor, a footrest will be needed to improve your posture. A footrest will help in attaining the right foot elevation, leg and knee position.
5	State 3 general hazards to look carefully working in a computer station.	<ul style="list-style-type: none"> <li>• Electric short-circuits</li> <li>• Radiation exposure</li> <li>• Noise exposure</li> </ul> <p>Etc.</p>
6	What are 4 major functions of a computer?	<ul style="list-style-type: none"> <li>• Taking data and instructions from a user</li> <li>• Processing the data as per instructions</li> <li>• Displaying data</li> <li>• Storing the processed data</li> </ul>
7	What are technical terms of the basic function of a computer?	<ul style="list-style-type: none"> <li>• Input function</li> <li>• Process function</li> <li>• Output function</li> </ul>

		<ul style="list-style-type: none"> <li>• Storage function</li> </ul>
8	What are most common and modern input devices?	<ul style="list-style-type: none"> <li>• Keyboard</li> <li>• Mouse</li> <li>• Scanners</li> <li>• Microphones</li> <li>• USB drives</li> <li>• Webcams</li> </ul> <p>Etc.</p>
9	What does the computer use when processing the input data?	CPU
10	What is a CPU?	It processes user instructions, executes scripts and programs, and runs commands of the OS that provide a platform for installing and using application software.
11	What are different forms of output functions that can be displayed?	<ul style="list-style-type: none"> <li>• Monitor</li> <li>• Printer</li> <li>• Speaker</li> <li>• Displays</li> </ul> <p>Etc.</p>
12	What are two types of storage components?	<p><b>Temporary:</b> Temporary storage components are used to store data temporarily. Data stored in a temporary storage component is erased when the system is shutdown. RAM is a compulsory temporary storage component. A computer uses the ram to store the running applications and their data.</p> <p><b>Permanent:</b> Permanent storage components are used to store data permanently. Data stored in a permanent storage component is not erased when the system is shutdown. The hard disk is the most common permanent storage component</p>
12	What are the benefits of naming conventions?	Naming records consistently, logically and in a predictable way will distinguish similar records from one another at a glance, and by doing so will facilitate the storage and retrieval of data. Through consistency and the application of logical standards we benefit from secure storage, and the ability to locate and access information.
13	What is the Web?	The Web, also known as the World Wide Web (WWW), is essentially a collection of an uncountable number of pages of information displayed on the Internet
14	Name three examples of web browsers?	<ul style="list-style-type: none"> <li>• Mozilla Firefox</li> <li>• Safari</li> <li>• Google Chrome</li> </ul>
15	How do you find information using a search engine?	Type the web address <a href="http://www.google.com">www.google.com</a> into the address bar at the top of your screen. Then hit Enter on your keyboard

16	All the files in a computer must be identifiable and traceable. How can you achieve a good practice? Provide examples.	It can be done by applying referencing to all documents/files. For example: Document/file references will include: <ul style="list-style-type: none"> <li>• file name, or full file path including file name</li> <li>• name/role of file author(s) or originator(s)</li> <li>• date of creation, edit or event which is the subject of the document/file</li> <li>• version number if applicable</li> </ul>
17	What types of documents can you create with WORD and give examples?	<ul style="list-style-type: none"> <li>• Letters: personal or business</li> <li>• Notices: basic flyers, menus and checklists</li> <li>• Reports- for school, work or a special interest group</li> </ul>
18	What are mostly used commands in the Home Tabs of WORD, and explain each briefly?	<p>1. <b>Font group:</b> The Font Group contains commands that change the appearance of the font. Font is the set of characters (letters, numbers, punctuation, etc.) in a particular style.</p> <p>2. <b>Style group:</b> A document created from a template, like the one you opened earlier (Facet design blank), has pre- designed styles for different parts of the document, such as paragraphs and headers.</p>
19	What is EXCEL and why people use it?	Excel is a spreadsheet program that allows you to store, organize, and manipulate data. Data can be text, numbers, and formulas. The data is entered into cells which are organized into columns and rows. Many people use Excel to keep a budget, use charts and graphs to show data, track sales for a business, and much more.

## 2. PT=Practical Test

#	Practical Activity	Evaluate Performance of the students
1	Undertake proper starting of the workplace computers	While performing the task, students will demonstrate knowledge and skills on the use of the computer and understand name of various parts and functions of workplace computers. Students will use proper starting procedures for safe and long-term use of the computers.
2	Possess skills to organise and manage folders and files in the computer	Workplace computers will have several documents and folders and need to be properly handled and managed. During performing the practical activity, student will know where different folders are located and follow common procedures of handling workplace documents stored within the computers.
3	Perform simple print job using the computer and the printer.	Prior to giving the print job, students need to competently understand functions of different computers and printers and their scope of usage. In this regard, should check the printer connection to the computer and test the printer performance prior to giving a workplace document for printing.
4	Work on Microsoft Word and Excel files	While attending this task, students need to create and open new files on excel and word and work on these files. They should know simple features associated with these applications and apply them to workplace tasks.

5	Perform proper shut down of computer	At the end of shift workplace computers are shut down to leave them safe for the next business day. Make sure student safely perform this task and follow workplace instructions and procedures on the use of the computers at the workplaces.
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### 3. OW = Observation at work Place

#	Activity to observe	Evaluate and assessment of the observations
1	Starting of the workplace computers	While starting the workplace computers, make sure the students follow safe and effective procedures and in particular, undertake standard operational procedures while starting the computers and preparing them for the workplace operations.
2	Organise and manage folders and files in the computer	Observe how the students use and manage the folders created on the workplace computers for the different workplace documents. Also evaluate competency of the students in handling and management of the folders and cross check the Standard Operating Procedures in using the workplace computers
3	Perform simple print	As the student attempts to attend simple print, make sure that appropriate procedures are followed while performing the print job.
4	Work on Microsoft Word and Excel files	While student creates and works on the word and excel files, makes sure their skill level and use of various tools are properly applied and the documents are properly saved and opened based on the work being performed.
5	Perform proper shut down of computer	As the students shut down computers, make sure they follow proper procedures and align these procedures to the workplace standards of the respective organizations. While shutting down, make sure manufacture recommendations are also taken applied.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	What procedures are applied in starting the workplace computer?	<p>Explain and demonstrate the following.</p> <ul style="list-style-type: none"> <li>✓ Correct and healthy postures while sitting at computers</li> <li>✓ Name of the various elements of the computers and their functions</li> <li>✓ List the workplace procedures if any related to starting the workplace computers</li> <li>✓ Explain correct steps to be used in starting the computer</li> <li>✓ Start the computer system and prepare it for use</li> </ul>

2	Explain how to use and manage the folders in the computer?	Explain and demonstrate the following. <ul style="list-style-type: none"> <li>✓ Reasons for creating folders and their applications</li> <li>✓ Create folder and show to the assessor</li> <li>✓ Show different folders created on the computer and explain functions</li> </ul>
3	Explain steps used for making simple print	Explain and demonstrate the following. <ul style="list-style-type: none"> <li>✓ Explain the steps involved in making a simple print using the printer connected to the computer</li> <li>✓ Select a document and show printer setting and giving print command</li> <li>✓ Take a simple print</li> </ul>
4	Explain how to apply browsing skills?	Explain and demonstrate the following. <ul style="list-style-type: none"> <li>✓ Use of search engines</li> <li>✓ Basic interaction of browser</li> <li>✓ Creating bookmarks in browser</li> <li>✓ Upload and download files</li> <li>✓ Navigation of hyperlink</li> </ul>
5	Explain common tools and applications used in both Microsoft Word and Excel?	Explain and demonstrate the following. <ul style="list-style-type: none"> <li>✓ Explain functions of both Microsoft Word and Excel applications</li> <li>✓ Create a small Microsoft Word file and save it</li> <li>✓ Create a small Microsoft excel file and save it</li> <li>✓ Open and edit them using different tools</li> </ul>
6	What procedures are applied in shutting down the workplace computer?	Explain and demonstrate the following. <ul style="list-style-type: none"> <li>✓ Explain proper shutting down procedures of workplace computers</li> <li>✓ Demonstrate steps involved in shutting down computers</li> <li>✓ Perform shutting down of workplace computers in front of the assessor.</li> </ul>

## 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.

3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>
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## Unit-5: Provide first aid

Unit No 05  
 Unit Title Provide first aid  
 Unit Code CONCM06V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Assess the situation</b>							
Physical hazards and risks to self and others' health and safety identified	✓	✓	✓	✓		✓	✓
Immediate risks to self and casualty's health and safety minimized by controlling hazards in accordance with occupational health and safety requirements	✓	✓	✓		✓	✓	✓
The situation assessed and prompt decision taken on actions required	✓	✓		✓	✓	✓	
Assistance sought from relevant persons/authority, as required and at the appropriate time	✓	✓	✓	✓		✓	✓
<b>2. Apply basic first aid techniques</b>							
Casualty's physical condition assessed by visible vital signs	✓	✓	✓	✓		✓	✓
First aid provided to stabilize the patient's physical and mental condition in accordance with enterprise policy on provision of first aid and recognized first aid procedures	✓	✓	✓		✓	✓	✓
Available first aid equipment used as appropriate	✓	✓		✓	✓	✓	
<b>3. Monitor the situation</b>							
Back-up services appropriate to the situation identified and notified promptly	✓	✓	✓	✓		✓	✓
Information about the patient's condition reported accurately and clearly to emergency services personnel or health professionals	✓	✓	✓		✓	✓	✓
<b>4. Prepare required documentation</b>							
Documented emergency situations according to enterprise procedures	✓	✓	✓	✓		✓	✓
Clear and accurate reports are provided within required time frames	✓	✓	✓		✓	✓	✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

**1. Written questions**

	Question	Answer
1	Define the term First Aid?	First aid is any care given to an injured or ill person (called a 'casualty') before professional medical assistance (ambulance, paramedics, nurse, or doctor) arrives on the scene to take control of the situation
2	What can include in the provision of First Aid?	<ul style="list-style-type: none"><li>• Mouth-to-mouth resuscitation – if the casualty is not breathing</li><li>• Cardio-Pulmonary Resuscitation (CPR) – where there is no breathing and no pulse</li><li>• Control of bleeding – to limit blood loss</li><li>• Wound care – to limit blood loss and infection by covering wounds</li><li>• Treatment for burns and scalds – including treatment for electric shock</li><li>• Bandaging and splinting – to fractures and sprains.</li></ul>
3	What are important to take into account when providing first aid?	<ul style="list-style-type: none"><li>• Protect yourself and others at all times against injury or harm – persons delivering first aid should not become casualties</li><li>• The casualty must be protected against further harm or injury</li><li>• Whenever there is a need to administer first aid make sure you notify your supervisor immediately to arrange for professional help to be called</li><li>• Wear protective gloves when administering first aid to protect against infection.</li></ul>
4	How to identify hazards?	<ul style="list-style-type: none"><li>• Use common sense – this is the most important aspect</li><li>• Use your sense of sight – look for things that could present a problem or danger. Look carefully in all directions. Be alert to smoke, fire and emerging issues</li><li>• Use your sense of hearing – listen for escaping gas, crackling of flames or creaking of wood and metal</li><li>• Use your sense of touch –vibrations or heat</li><li>• Use your sense of smell –gas or smoke.</li></ul>
5	In order to minimize the risks of the hazards. Where general actions you	Casualties should not be moved until they have been assessed as being safe to move but if there is a serious and immediate risk of extra injury to a casualty from an identified hazard it is standard practice to move them away from the hazard.

	can reduce these issues on site?	<p>If uninjured bystanders are near an identified hazard, they must be told to move away to a safe location.</p> <p>Whenever there is identified danger from fire, gas leaks or smoke the emergency fire authorities must be called.</p> <p>Where there is an identified hazard from electricity, the electricity supply company or someone from within the workplace with knowledge of how to turn off the power must be contacted.</p>
6	What are other often actions that can include in diminishing of risk of hazards?	<ul style="list-style-type: none"> <li>• If there is a fire near the casualty – call the fire brigade, move the casualty out of the danger zone or fight the fire with nearby hoses, fire blanket or extinguisher</li> <li>• If the casualty’s situation is being made worse by rain or sunshine – provide cover to the person</li> <li>• If gas is leaking from a damaged appliance – turn off the gas at the stop valve and make sure no one is smoking</li> <li>• If unstable items are near-by and posing a risk of – either move the items or casualty</li> <li>• If the casualty is in a position where they are likely to be run over by vehicles – move them or take action to stop traffic.</li> </ul>
7	If a casualty is unconscious and unsure of an injury protecting neck is very vital. How can you help to protect the neck in case of this situation?	<ul style="list-style-type: none"> <li>• Keep the casualty still – tell the casualty not to move</li> <li>• Kneel behind the head and place your hands on either side to support it – with the head, neck and spine in a straight line</li> <li>• Put rolled up towels, blankets, or clothing on each side of the casualty’s head to keep it from moving.</li> </ul>
8	The “fireman’s carry” is used to move unconscious people or casualties who are unable to walk. What are the steps of fireman’s carry?	<ul style="list-style-type: none"> <li>• Place the casualty face down</li> <li>• Grab the person around the waist, and help bring him or her to a standing position, facing you</li> <li>• Keep one arm around his or her waist when you have him or her in the standing position grasp the casualty’s right arm in your left hand and swing his or her arm around the back of your neck</li> <li>• Pull him or her across your shoulders by bringing his or her raised arm around your neck and over your shoulder. In this position, the injured person's legs will be over one shoulder, and his or her arm and head will be over the other shoulder</li> <li>• Reposition your hand from the person's waist to the back of his or her knee</li> <li>• Lift yourself with the injured person into a standing position.</li> </ul>
9	What does DRABC stands for?	<p>D for danger – assess the situation</p> <p>R for response – check consciousness, check on vital signs</p> <p>A for airway – open airway</p> <p>B for breathing – check respiration rates</p> <p>C for circulation – give chest compressions.</p>

10	What are the important aspects of Danger in DRABC?	<ul style="list-style-type: none"> <li>• Check for danger to yourself, the casualty and others. Look for obvious, immediate, life-threatening hazards such as fire, the possibility of a gas explosion, and electrical hazards</li> <li>• If there is danger around, you will need to move yourself and your casualty to prevent further injury to anyone</li> <li>• If you think the casualty has a spinal injury, take care to stop more damage to the spine by stopping movement of the casualty's neck and back.</li> </ul>
11	What are the important aspects of Airway in DRABC?	<ul style="list-style-type: none"> <li>• If casualty is not breathing, open the airway by placing one hand on their forehead and gently tilt the head back by lifting the chin</li> <li>• Remove any visible obstructions (vomit, mucus, saliva, false teeth, loose or broken teeth, food, tongue) from the mouth and nose to unblock the airways</li> <li>• If obstructions are present the casualty will not be able to breathe and the obstruction will also impede the provision of rescue breathing/mouth-to-mouth resuscitation also known as ear (expired air resuscitation).</li> </ul>
12	How can you find a pulse? Explain briefly.	<p>If there is no pulse and there is no sign of breathing, cpr (cardio-pulmonary resuscitation) must commence.</p> <p>A good point for taking the pulse is the neck (carotid arteries). Place the middle and index fingers on the casualty's larynx (voice box).</p> <p>Move the fingers to the side until you feel the groove (between the bone and the muscle) next to the trachea (wind pipe), then press on the groove until you feel the pulse.</p> <p>Place the tips of your index and middle fingers over the pulse site and press gently. Using a watch with a second hand. Count the pulse for 15 seconds and then multiply by four to obtain beats per minute.</p> <p>Write down your findings.</p>
12	What is the normal pulse rate of an adult and what happens when the pulse rate rises more?	<p>A normal pulse rate for an adult when resting is 60 to 80 beats per minute. The average is 72 beats per minute.</p> <p>A resting pulse rate of more than 80 beats per minute is a higher than normal pulse rate. This can be caused by shock, bleeding, heat, dehydration, fever, pain or exercise.</p>
13	Before a causal assessment of the casualty what kind of information you must attain from the casualty? State why you would require this information.	<p>If the casualty is conscious and able to talk, speak to them to obtain whatever history is available relating to their condition. By putting the history, signs and symptoms together, you will have a better assessment of the injury.</p>
14	What are the key aims of first aid and explain each of them shortly?	<p>1. <b>Preserve life:</b> the overriding aim of all medical care, including first aid, is to save lives and minimise the threat of death.</p>

		<p>2. <b>Prevent further harm:</b> also, sometimes called prevent the condition from worsening, or danger of further injury. This covers both external factors, such as moving a patient away from any cause of harm, and applying first aid techniques to prevent worsening of the condition, such as applying pressure to stop a bleeding which becomes serious.</p> <p>3. <b>Promote recovery:</b> first aid also involves trying to start the recovery process from the injury, and in some cases might involve completing a treatment, such as in the case of applying a plaster to a small wound.</p>
15	In a sudden emergency situation such as Obstruction (choking). How will you perform ABC intervention steps to before giving treatment?	<p>Obstruction (choking) is a life-threatening emergency. For these reasons, when we get to the injured, care must first be brought to his or her airway (A) to ensure it is clear. Following evaluation of the airway, a first aid attendant would determine adequacy of breathing (B) and provide rescue breathing if necessary. Assessment of circulation (C) is now not usually carried out for patients who are not breathing. First aiders must conclude indirectly that unconscious patients, without breathing have no circulation and go straight to chest compressions. Pulse checks may be done on less serious patients. Once the ABCs are secured, first aiders can begin additional treatments, as required.</p>
16	What are two types of wounds?	Open wound and closed wounds
17	Explain what open and closed wounds are?	<ul style="list-style-type: none"> <li>• In open wounds, the skin is cracked open, leaving the underlying tissue exposed to the outside environment, which makes it more vulnerable to bleeding and infections.</li> <li>• In closed wounds, the skin is intact and the underlying tissue is not directly exposed to the outside world. Even with the skin intact, the damage can reach down to the underlying muscle, internal organs and bones. That is why these kinds of wounds can be complicated by severe bleeding, large bruises, nerve damage, bone fractures and internal organ damage.</li> </ul>
18	Mention 3 types of open wounds.	<ul style="list-style-type: none"> <li>• Incisions or incised wounds, caused by a clean, sharp-edged object such as a knife, razor, or glass splinter</li> <li>• Lacerations, irregular tear-like wounds caused by some blunt trauma</li> <li>• Abrasions, superficial wounds in which the topmost layer of the skin (the epidermis) is scraped off. Abrasions are often caused by a sliding fall onto a rough surface</li> </ul>
19	Mention 2 types of closed wounds.	<ul style="list-style-type: none"> <li>• Contusions, more commonly known as bruises, caused by a blunt force trauma that damages tissue under the skin.</li> <li>• Hematomas, also called a blood tumor, caused by damage to a blood vessel that in turn causes blood to collect under the skin.</li> </ul>

20	What are the following measures that can be taken in giving first aid to a victim of an open wound?	<ol style="list-style-type: none"> <li>1. Stop the bleeding</li> <li>2. Minor cuts and scrapes usually stop bleeding on their own</li> <li>3. If they don't, apply gentle pressure with a clean cloth or bandage. Hold the pressure continuously for 20 to 30 minutes and if possible, elevate the wound.</li> <li>4. Clean the wound</li> <li>5. Rinse out the wound with clear water. Soap can irritate the wound, so try to keep it out of the actual wound. If dirt or debris remains in the wound after washing, use tweezers cleaned with alcohol to remove the particles. To clean the area around the wound, use soap and a washcloth.</li> <li>6. Cover the wound</li> <li>7. If the bleeding slows, cover the wound with a clean dressing and bandage. Dressings and bandages can help keep the wound clean and keep harmful bacteria out. A dressing is a sterile pad or compress (usually made of gauze or cotton wrapped in gauze) used to cover wounds, to control bleeding and/or prevent further contamination</li> </ol>
21	What are the following measure that should be taken in giving first aid to a victim of a closed wound?	<ol style="list-style-type: none"> <li>1. Application of direct pressure, preferably with ice wrapped in a cloth, for several minutes, in order to arrest the bleeding as well as to reduce the swelling.</li> <li>2. Elevation of the affected region will also support in reducing the pressure as well as the re-absorption process and it should be practiced as and when appropriate.</li> </ol>
22	What are reasons or cases to seek help immediately from a health professional?	<ul style="list-style-type: none"> <li>• If the wound is in the head, chest or abdomen (unless it is minor).</li> <li>• If there is blue, white or cold skin, numbness, tingling, loss of feeling, or the person is unable to move a limb below the wound.</li> <li>• If your tetanus shots are not up to date, especially if the object that caused the puncture was dirty, such as a rusty nail or farm implement.</li> <li>• If a deep wound to the foot occurred through a shoe.</li> <li>• If an animal bite is severe and may need stitches, or if it is on the hand or face.</li> </ul> <p>Etc.</p>
23	What is external bleeding?	External bleeding is generally described in terms of the origin of the blood flow by vessel type.
24	What are the categories of external building	<ol style="list-style-type: none"> <li>1. Arterial bleeding</li> <li>2. Venous bleeding</li> <li>3. Capillary bleeding</li> </ol>
25	Explain what venous bleeding is?	Venous bleeding: This blood is flowing from a damaged vein. As a result, it will be blackish in colour (due to the lack of oxygen being transported) and will flow in a steady manner. Caution is

		still indicated; while the blood loss may not be arterial, it can still be quite substantial, and can occur with surprising speed without intervention.
26	What is internal bleeding?	Internal Bleeding is one of the most serious consequences of trauma. It may occur after any significant physical injury.
27	What are the main types of trauma that can cause internal bleeding?	<ol style="list-style-type: none"> <li>1. <b>Blunt trauma</b> - This kind of trauma happens when a body part collides with something else, usually at high speed. Blood vessels inside the body are torn or crushed either by shear forces or a blunt object. Examples are car accidents, physical assaults, and most falls.</li> <li>2. <b>Penetrating trauma</b> - This happens when a foreign object penetrates the body, tearing a hole in one or more blood vessels. Examples are gunshot wounds, stabbings, or falling onto a sharp object.</li> </ol>
28	What are the most serious internal bleeding which can be caused by a trauma?	<ul style="list-style-type: none"> <li>• Head trauma with internal bleeding (intracranial hemorrhage)</li> <li>• Bleeding around the lungs (hemothorax)</li> <li>• Bleeding around the heart (hemopericardium and cardiac tamponade)</li> <li>• Tears in the large blood vessels near the center of the body (aorta, superior and inferior vena cava, and their major branches)</li> <li>• Damage caused by trauma to the abdomen such as liver or spleen lacerations or perforation of other soft organs</li> </ul> <p>Etc.</p>
29	What are the following measures that need to be taken in giving first aid to a victim of external bleeding?	<ol style="list-style-type: none"> <li>1. Wash your hands to avoid infection and put on gloves</li> <li>2. Lay on the injured person down and cover the person to prevent loss of body heat.</li> <li>3. If possible, position the person's head slightly lower than the trunk or elevate the legs and elevate the site of bleeding</li> <li>4. While wearing gloves, remove any obvious dirt or debris from the wound. Don't remove any large or more deeply embedded objects.</li> <li>5. Your principal concern is to stop the bleeding.</li> </ol>
30	How can you stop bleeding by applying pressure directly on the wound?	<ul style="list-style-type: none"> <li>• Use a sterile bandage or clean cloth and hold continuous pressure for at least 20 minutes without looking to see if the bleeding has stopped.</li> <li>• Maintain pressure by binding the wound tightly with a bandage or clean cloth and adhesive tape.</li> <li>• Use your hands if nothing else is available.</li> <li>• If the bleeding continues and seeps through the gauze or other material you are holding on the wound, don't remove it. Instead, add more absorbent material on top of it</li> </ul>

31	If bleeding doesn't stop while applying direct pressure on the wound how are you going to stop the bleeding?	<ul style="list-style-type: none"> <li>• If the bleeding doesn't stop with direct pressure, apply pressure to the artery delivering blood to the area.</li> <li>• Squeeze the main artery in these areas against the bone. Keep your fingers flat.</li> <li>• With your other hand, continue to exert pressure on the wound itself.</li> </ul>
32	What is fracture and what the main types of fractures?	A fracture is the medical term for a broken bone. There are many types of fractures, but the main categories are open, and closed.
33	Explain an open fracture.	An open fracture is one in which the bone breaks through the skin. This is an important difference from a closed fracture because with an open fracture there is a risk of a deep bone infection
34	Explain a closed fracture.	A closed fracture is when the bone breaks but there is no puncture or open wound in the skin.
35	What are the symptoms to identify a fracture?	DOTS: D for deformity, O for open wounds, T for tenderness and S for swelling
36	What are the following measure to be taken in giving first aid to a victim with bone injury?	<ul style="list-style-type: none"> <li>• Don't move the person except if necessary to avoid further injury. Take these actions immediately while waiting for medical help: <ul style="list-style-type: none"> <li>○ Stop any bleeding</li> <li>○ Apply pressure to the wound with a sterile bandage, a clean cloth or a clean piece of clothing.</li> </ul> </li> </ul>
37	What is the purpose of splinting?	Splinting reduces pain, prevents further damage to muscles, nerves and blood vessels, prevents closed fracture from becoming open fracture and reduces bleeding and swelling.
38	In case of emergency what can serve as a splint?	In an emergency, almost any firm object or material can serve as a splint such as sticks, boards, or even rolled up newspapers. If none can be found, use a rolled blanket or clothing. An injured body part can also be taped to an uninjured body part in order to prevent it from moving.
39	How can you appropriately prepare a splint and give an example?	<p>Splint must be well padded on the sides touching the body; if they are not properly padded, they will not fit well and will not adequately immobilize the injured part. Before applying splint open wounds must be covered. We have to immobilize in position found.</p> <p>A basic rule of splinting is that the joint above and below the broken bone should be immobilized to protect the fracture site. For example, if the lower leg is broken, the splint should immobilize both the ankle and the knee.</p>
40	How can you treat a person who is feeling faintish or loss of breath?	<ul style="list-style-type: none"> <li>• If the person feels faint or is breathing in short, rapid breaths, lay the person down with the head slightly lower than the trunk and, if possible, elevate the legs.</li> </ul>
41	What is a dislocation and how can it be caused?	A dislocation is an injury in which the ends of bones are forced from their normal positions. The cause is usually trauma resulting from a fall, an auto accident or a collision during contact or high-speed sports.

42	What are the symptoms of dislocation?	Rapid swelling and discoloration, loss of ability to use the joint, severe pain and muscle spasms, possible numbness and loss of pulse below the joint, and shock are characteristic symptoms of dislocations.
43	What is a sprain?	A sprain is a stretching or tearing of ligaments — the tough bands of fibrous tissue that connect one bone to another in your joints.
44	What are common location for a sprain?	The most common location for a sprain is in ankle.
43	What are the following measures that needs to be taken in giving first aid to a victim with joint injury?	<ol style="list-style-type: none"> <li>1. For dislocations, splint and provide care as you would for fracture.</li> <li>2. For sprains, use RICE procedure - R=rest, I=Ice, S=compression and E=elevation</li> </ol>
44	What are the following measure that needs to be taken in giving first aid to a victim with suspected spinal cord injury?	<ol style="list-style-type: none"> <li>1. Seek medical assistance immediately. Call for EMS (102)</li> <li>2. Until EMS arrives: <ul style="list-style-type: none"> <li>• DO NOT move victim unless absolutely necessary to save victim's life.</li> <li>• DO NOT bend or twist victim's neck or body. Careful handling is extremely important.</li> <li>• Maintain position in which victim was found and immobilize head, neck, shoulders, and torso - roll up towels, blankets, jackets, or clothing, and place around head, neck, shoulders, and torso</li> </ul> </li> <li>3. If the person is not breathing or showing signs of circulation, begin CPR but do not lift the chin to open an airway. Instead, you should gently pull the jaw forward</li> <li>4. If victim must be moved to perform rescue breathing, to clean mouth of vomit or in danger of further injury, enlist help at least one other person to keep victim's head, torso, and legs in straight line as you turn victim.</li> </ol>
45	What are burns?	Burns are thermal injury caused by exposure to excess heat.
46	What are the four types of burns?	<ol style="list-style-type: none"> <li>1. Burns that affect only the superficial skin are known as superficial or first-degree burns.</li> <li>2. When damage penetrates into some of the underlying layers, it is a partial-thickness or second-degree burn.</li> <li>3. In a full-thickness or third-degree burn, the injury extends to all layers of the skin.</li> <li>4. Sometimes we talk about a fourth-degree burns when the injury affects deeper tissues, such as muscle or bone.</li> </ol>
47	What are the actions to be taken for a minor burn injury?	<ol style="list-style-type: none"> <li>1. <b>Cool the burn.</b> <ul style="list-style-type: none"> <li>• Hold the burned area under cool (not cold) running water for 10 or 15 minutes or until the pain subsides.</li> <li>• If this is impractical, immerse the burn in cool water or cool it with cold compresses.</li> <li>• Don't put ice on the burn</li> </ul> </li> </ol>

		<p><b>2. Cover the burn with a sterile gauze bandage</b></p> <ul style="list-style-type: none"> <li>• Wrap the gauze loosely to avoid putting pressure on burned skin.</li> <li>• Bandaging keeps air off the burn, reduces pain and protects blistered skin.</li> </ul> <p><b>3. Take an over-the-counter pain reliever</b></p> <ul style="list-style-type: none"> <li>• These include aspirin, ibuprofen , naproxen or acetaminophen</li> <li>• Use caution when giving aspirin to children or teenagers.</li> <li>• Talk to your doctor if you have concerns.</li> </ul>
48	What are the actions to be taken for a major burn injury?	<p>For major burns, call 112 or emergency medical help. Until an emergency unit arrives, follow these steps:</p> <p><b>1. Don't remove burned clothing.</b></p> <ul style="list-style-type: none"> <li>• However, do make sure the victim is no longer in contact with smoldering materials or exposed to smoke or heat.</li> </ul> <p><b>2. Don't immerse large severe burns in cold water</b></p> <ul style="list-style-type: none"> <li>• Doing so could cause a drop in body temperature (hypothermia) and deterioration of blood pressure and circulation (shock).</li> </ul> <p><b>3. Check for signs of circulation</b> (breathing, coughing or movement).</p> <ul style="list-style-type: none"> <li>• If there is no breathing or other sign of circulation, begin CPR.</li> </ul> <p><b>4. Elevate the burned body part or parts.</b></p> <ul style="list-style-type: none"> <li>• Raise above heart level, when possible.</li> </ul> <p><b>5. Cover the area of the burn</b></p> <ul style="list-style-type: none"> <li>• Use a cool, moist, sterile bandage, clean, moist cloth or moist cloth towels</li> </ul>
49	What can happen to a person when he/she is in shock and how can you protect a person in shock?	<p>When a person is in shock, his or her organs aren't getting enough blood or oxygen. If untreated, this can lead to permanent organ damage or death. Shock can be a life- threatening problem. The best way to protect people from the serious damages that shock can have on the system is to recognize the symptoms before the person gets into serious trouble.</p>
50	What are common symptoms that can be present in a shocked situation?	<ul style="list-style-type: none"> <li>• Pale, cold, clammy and moist skin</li> <li>• Vacant or dull eyes, dilated pupils</li> <li>• Anxiety, restlessness, and fainting</li> <li>• Weak, rapid, or absent pulse</li> <li>• Nausea and vomiting</li> </ul>
51	How can you monitor a situation while the ambulance and why should you wait for an ambulance rather than taking the	<p>They can get the patient to hospital quickly, legally, and more safely.</p> <ol style="list-style-type: none"> <li>1. Stay on the line with 911 and follow emergency instructions.</li> <li>2. Stay calm and try to keep the patient calm.</li> </ol>

	injured or ill person to the hospital yourself?	<ol style="list-style-type: none"> <li>3. Don't move a patient who was injured in an automobile accident or fall, or who was found unconscious.</li> <li>4. If the patient is cold, cover them with a blanket.</li> <li>5. Don't give an injured person anything to eat or drink (unless instructed by the 911 dispatcher).</li> <li>6. Have someone watch for the ambulance and show the crew how to get to the patient. (This is especially important in an apartment or office building, or if your address is hard to see from the street).</li> </ol>
52	Documentation or systemic incident reports related to various incidents occurring while the worker is on duty. What are the following benefits for the team or organization in documentation related issues?	<ol style="list-style-type: none"> <li>1. Incident Reports will maintain alertness among all the stakeholders</li> <li>2. Most incident report forms identify the barriers that prevent adverse situations from developing into a major accident or disaster. Recording of the small to medium events will ensure major stakeholders of the organization is kept alert and hence reduce number of accidents or injuries to guests as well as to the staff of the organization.</li> <li>3. Lessons learned within the organisation and benchmarks between industries</li> <li>4. The gathered data can be used for comparisons both within and between organisations and industries. Even though the incident categories and types differ between industries, verticals and even functions, the habit of being aware in the field and documenting the observations is the same.</li> <li>5. Reporting is cheaper than the costs of a major incident</li> </ol>

## 2.PT=Practical Test

#	Practical Activity	Performance to be evaluated
1	Perform role play of an accident	<p>During the role play, ensure the students perform the following.</p> <ul style="list-style-type: none"> <li>✓ Assess and evaluate for existing hazards and dangers and try to reduce or manage threats</li> <li>✓ Assess and evaluate dangers to the person injured</li> <li>✓ Assess and evaluate dangers to the person attending the injured patient</li> <li>✓ Monitor the situation carefully</li> </ul>
2	Apply basic first aid techniques	<p>As students to perform first aid techniques on the following</p> <ul style="list-style-type: none"> <li>✓ Relevant first aid techniques for cases of breathing, blood circulation and consciousness</li> <li>✓ Attend injuries related to <ul style="list-style-type: none"> <li>▪ Abdominal trauma</li> <li>▪ Allergic reactions</li> <li>▪ Bleeding</li> <li>▪ Chemical contamination</li> <li>▪ Choking</li> <li>▪ Cold injuries</li> <li>▪ Cardio-vascular failure</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>▪ Dislocations and fractures</li> <li>▪ Drowning</li> <li>▪ Poisoning and toxic substances</li> <li>▪ Medical conditions including epilepsy, diabetes, asthma</li> <li>▪ Eye injuries</li> <li>▪ Head injuries</li> <li>▪ Minor skin injuries</li> <li>▪ Neck and spinal injuries</li> <li>▪ Needle stick injuries</li> <li>▪ Puncture wounds and cuts</li> <li>▪ Crush injuries</li> <li>▪ Shock</li> <li>▪ Smoke inhalation</li> <li>▪ Sprains and strains</li> <li>▪ Substance abuse</li> <li>▪ Unconsciousness</li> <li>▪ Infections</li> <li>▪ Inhalation of toxic fumes and airborne dusts</li> <li>▪ Bone and joint injuries</li> <li>▪ Eye injuries</li> <li>▪ Burns and scalds, thermal, chemical, friction and electrical</li> </ul>
3	Prepare required documentation	Students are asked to prepare following documents ✓ Incident reports

### 3. OW = Observation at work Place

#	Activity to be observed	Assessment and evaluation of the task being performed
1	Observe if student evaluate the situation	During the role play, assess and evaluate how students assess and evaluate the situations. Ensure the way they approach the incident is with care and to see if they take a moment to review existing dangers and evaluate dangers to the patient or to self.
2	Apply basic first aid techniques	Students will be performing various first aid procedures stated above. It is important that the four-step process in providing basic first aid activities. Assess and evaluate competencies of the students in attending relevant first aid activities and interventions performed as part of the assessment.
3	Prepare incident reports	Observe how students approach in making the incident report and assess and evaluate the format and structure of the report and inclusion of the all the relevant data into the report.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	How to assess and evaluate the situation	Students need to detail steps of assessing and evaluating the situation as soon as they arrive the site of the accident. Such steps need to focus on assessing and evaluating of the surrounding environment, immediate danger to the injured person and to the person attending the site.
2	Explain techniques of providing different first aid techniques	Student need to explain proper procedures and techniques in attending the following first aid procedures. <ul style="list-style-type: none"> <li>▪ Abdominal trauma</li> <li>▪ Allergic reactions</li> <li>▪ Bleeding</li> <li>▪ Chemical contamination</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Choking</li> <li>▪ Cold injuries</li> <li>▪ Cardio-vascular failure</li> <li>▪ Dislocations and fractures</li> <li>▪ Drowning</li> <li>▪ Poisoning and toxic substances</li> <li>▪ Medical conditions including epilepsy, diabetes, asthma</li> <li>▪ Eye injuries</li> <li>▪ Head injuries</li> <li>▪ Minor skin injuries</li> <li>▪ Neck and spinal injuries</li> <li>▪ Needle stick injuries</li> <li>▪ Puncture wounds and cuts</li> <li>▪ Crush injuries</li> <li>▪ Shock</li> <li>▪ Smoke inhalation</li> <li>▪ Sprains and strains</li> <li>▪ Substance abuse</li> <li>▪ Unconsciousness</li> <li>▪ Infections</li> <li>▪ Inhalation of toxic fumes and airborne dusts</li> <li>▪ Bone and joint injuries</li> <li>▪ Eye injuries</li> <li>▪ Burns and scalds, thermal, chemical, friction and electrical</li> </ul>
3	How to keep monitoring the patient while waiting for the paramedic personnel	Students need to explain how to keep monitoring the patient while waiting for the paramedic personnel or being transported to a health facility.
4	Explain structure and information to be included in the incident report	Students need to explain the structure and the date to be included within the Incident Reports. In particular, make sure the reports are prepared according to relevant standards and will be compliant to standard incident reports.

## 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.  Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training

		institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.
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## Unit-6: Respond to Fire

Unit No                    06  
 Unit Title                Respond to Fire  
 Unit Code                CONCM07V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Prepare for fire</b>							
Procedures related to a fire emergency are accessed, interpreted and rehearsed	✓	✓	✓	✓		✓	✓
Location of firefighting equipment is identified and the equipment is checked in accordance with organizational procedures and referred for maintenance/replacement as required	✓	✓	✓		✓	✓	✓
<b>2. Carry out initial notification and assessment</b>							
Nature and scope of the fire is identified, confirmed and reported to appropriate personnel	✓	✓	✓	✓		✓	✓
Fire situation is assessed and appropriate course of action is determined in keeping with requirements for personal safety	✓	✓	✓		✓	✓	✓
Notification of fire threat is undertaken in accordance with authorized procedures	✓	✓		✓	✓	✓	
Emergency evacuation procedures are followed, where appropriate, and in accordance with organizational procedures	✓	✓	✓	✓		✓	✓
<b>3. Extinguish fires</b>							
Fires are extinguished using the appropriate equipment, materials and procedures	✓	✓	✓	✓		✓	✓
Extinguisher is applied to ensure fast knockdown of fire	✓	✓	✓		✓	✓	✓
Extinguisher is used at the appropriate range and time	✓	✓		✓	✓	✓	
Extinguisher is used to minimize damage to equipment and facilities and to minimize risk of injury to personnel	✓	✓	✓	✓		✓	✓

**Note:**

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play

## 1. Written questions

#	Question	Answer
1	What is fire?	Fire is very rapid oxidation. Rusting iron and rotting wood are common examples of slow oxidation. Fire, or combustion, is rapid oxidation as the burning substance combines with oxygen at a very high rate.
2	What are common causes of workplace fires?	<ul style="list-style-type: none"> <li>• Faulty Electrics</li> <li>• Flammable or combustible materials</li> <li>• Human Error</li> <li>• Negligence</li> <li>• Arson</li> </ul>
3	Explain 2 common causes of workplace fires?	<ol style="list-style-type: none"> <li>1. Faulty Electrics are a very common cause of workplace fires and include loose wires and antiquated or faulty equipment. Every employer needs to ensure that fixed electrical equipment is maintained on a regular basis.</li> <li>2. Flammable or combustible materials represent a danger to your staff and your business. Every company should prioritize fire safety when undertaking risk assessments, and this is crucial in premises that hold any flammable or combustible materials or substances that must be stored appropriately stored and disposed of correctly. All staff should attend a fire safety training course to ensure correct procedure.</li> </ol>
4	What are the three things that are needed for combustion to take place?	<ul style="list-style-type: none"> <li>• fuel (to vaporize and burn)</li> <li>• oxygen (to combine with fuel vapour)</li> <li>• heat (to raise the temperature of the fuel vapour to its ignition temperature).</li> </ul>
5	What are the five classes of fire?	<p>Classes of fire Combustible and flammable fuels have been broken down into five categories:</p> <ul style="list-style-type: none"> <li>• Class A fires are those involving organic solids such as paper or wood</li> <li>• Class B fires are those involving flammable liquids</li> <li>• Class C fires are those involving flammable gases</li> <li>• Class D fires are those involving metals</li> <li>• Class F fires are those involving cooking oils</li> </ul>
6	What are activities that need to be continuously performed in preventing fires from occurring?	<ol style="list-style-type: none"> <li>1. Risk assessment</li> <li>2. Fire prevention</li> <li>3. Undertake regular fire risk assessment</li> <li>4. Follow fire precautions at all times</li> <li>5. Evaluate and ensure means of escape</li> <li>6. Undertake regular fire emergency planning</li> <li>7. Undertake regular training and sharing of information</li> <li>8. Maintain record keeping or log books</li> </ol>
7	Explain how risk assessment can be taken in prevention of fire.	The first step in fire prevention is to assess the risks and record them in a risk register. This requires reviewing and assessing the means by which a fire might start and spread, the potential consequences and the available approaches to mitigate the risk. This includes assessing day-to-day operations, risks associated with periodic building and

		<p>maintenance work and those arising from installing new equipment, or adopting new or changing technologies.</p>
8	<p>Explain how to undertake regular fire risk assessment.</p>	<p>The responsible person must ensure that a suitable and sufficient fire risk assessment of the premises is completed and reviewed on a regular basis.</p> <p>A fire risk assessment is an organised and methodical look at the premises, the activities carried on there and the likelihood that a fire could start and cause harm to those in and around the premises. There is no set format or approach but a template is provided that may assist establishments in completing a fire risk assessment.</p>
9	<p>Explain the following of fire precaution at all times briefly.</p>	<p>In the event of a fire occurring, there should be suitable measures in place to detect a fire, give warning of fire and that mitigate the spread of smoke and fire.</p> <ul style="list-style-type: none"> <li>• Fire detection and warning systems should be installed</li> <li>• Emergency lighting should be installed</li> <li>• Firefighting equipment (fire extinguishers) should be installed</li> <li>• Fire signs, notices and plans should be fitted</li> <li>• Fire doors should be fitted in accordance with good practice and well maintained</li> </ul>
10	<p>Explain how to evaluate and ensure means of escape.</p>	<p>The ability of the occupants of a building to evacuate in the case of fire is a fundamental aspect of fire safety. In the case of a fire, or indeed any other emergency, people should be able to turn away from the hazard and escape to the open air or other place of safety.</p> <p>Escape routes should be inspected regularly to check they are not obstructed and that fire exit doors are unlocked.</p>
11	<p>Explain how to undertake fire emergency planning.</p>	<p>When a fire situation is detected, it is vital that establishments have in place appropriate procedures. All establishments need to prepare a fire emergency plan under the guidance of experts.</p> <p>It is vital that the emergency plan is tested so as to ensure that all staff are aware of the procedures to be followed in the event of a fire. This can be achieved by undertaking a desk-top exercise and also by completing regular fire drills (at least once every half-term).</p>
12	<p>How can you maintain record keeping or log books?</p>	<p>To prepare well, it is important that appropriate records are kept in a specified log book or file and the records need to be checked for accuracy. In particular, the log book need to include the following.</p> <ul style="list-style-type: none"> <li>• Details of any significant findings from the fire risk assessment and any action taken</li> <li>• Testing and checking of escape routes, including final exit locking mechanisms, such as panic devices, emergency exit devices and any electromagnetic devices;</li> <li>• Testing of fire-warning systems, including weekly alarm tests and periodic maintenance by a competent person; recording of false alarms;</li> <li>• Testing and maintenance of emergency lighting systems;</li> <li>• Testing and maintenance of fire extinguishers, hose reels and fire blankets</li> <li>• Recording and training of relevant people and fire evacuation drills;</li> <li>• Maintenance and audit of any systems that are provided to help the fire and rescue service</li> <li>• The fire emergency plan</li> </ul>

12	What continuous assessment and maintenance regulatory requirements and good practices?	<ol style="list-style-type: none"> <li><b>Portable Fire Fighting Equipment:</b> All portable firefighting equipment has to be checked by a competent person on an annual basis (e.g. extinguishers, fire blankets and hoses).</li> <li><b>Fire Detection and Warning Systems (alarms):</b> Fire alarm tests need to be carried out in accordance with requirements. This requires weekly tests of the audible fire alarm system, quarterly and annual tests of all devices such as heat and smoke detectors, call points and sounders should also be carried out by a competent contractor.</li> <li><b>Emergency Lighting:</b> Emergency lighting should be tested by facility maintenance team on a regular basis to ensure the workplace is lit during emergency situations such as fire.</li> <li><b>Evacuation Paths:</b> Every workplace needs to have proper pathways worked out and displayed to the staff in the event of fire. Referred pathways and doors and need to be checked on regular basis to prevent fatalities and reduce damage to the staff in case of fire.</li> </ol>
13	What are the portable fire-fighting equipment?	Normally available fire-fighting equipment includes portable appliances such as extinguishers, buckets of sand or water and fire-resistant blankets. In larger premises you will find automatic sprinklers, hose reels and hydrant systems.
14	What are the main five types of fire extinguishers?	Water, Foam, Dry Powder, CO2 and Wet Chemical.
15	How can you follow the procedure of extinguishing fire using the (PASS)? Explain each step of them briefly.	<ul style="list-style-type: none"> <li>• Pull the safety pin, this will allow you to discharge the extinguisher.</li> <li>• Aim the extinguisher the base of the fire, this will allow you to hit the fuel.</li> <li>• S- Squeeze the top handle or lever, this will release the pressurized extinguishing agent.</li> <li>• S- Sweep the extinguisher hose from side to side until the fire is completely out.</li> </ul> <p>Wait and carefully check that the fire is out and has not reignited. If it has reignited, spray again – but remember that a typical fire extinguisher usually provides only 60 seconds of extinguishing power.</p>
16	What are the regular inspection that are required to follow while extinguishing fire?	<ul style="list-style-type: none"> <li>• Fire extinguishers should be mounted on the wall to prevent being damaged.</li> <li>• The area in front of the extinguisher shall be kept clear at all times.</li> <li>• The pressure gauge should be in the green zone at all times.</li> <li>• Fire extinguishers should be inspected on a monthly basis.</li> <li>• Know the location of all fire extinguishers in your facility.</li> </ul>
17	Mention few protective equipment used.	<ol style="list-style-type: none"> <li>1. Bunker gear</li> <li>2. Fire Helmet</li> <li>3. Protective hoods</li> <li>4. Boots and gloves</li> </ol> <p>Etc.</p>
18	Why is an emergency evacuation procedure or plan important?	Fire represents one of the biggest workplace safety threats and can result in serious injuries or even fatalities. Workplace fires can also cause extensive property damage, and can render the worksite either destroyed or out of service indefinitely. For these reasons, an effective workplace fire evacuation plan is important.

19	What are basic fire safety you must need to know for every worksite?	<ul style="list-style-type: none"> <li>• Know the location of the fire extinguishers in the workplace. You should be aware where the nearest extinguisher is at all times</li> <li>• Know where your nearest emergency exits are</li> <li>• Know the difference between alarm signals to quickly recognize the situation</li> </ul>
20	What should do when you discover a fire?	<ul style="list-style-type: none"> <li>• Alert all other individuals within the workplace by activating the nearest fire alarm, shouting clearly or by using other procedures set in place by your company</li> <li>• Use the nearest exit to evacuate the workplace</li> <li>• Use a fire extinguisher to put the fire out. Be careful while doing this and do not attempt if yours or other safety is at risk or on large fires</li> </ul>
21	What should be done during evacuation at a worksite?	<ul style="list-style-type: none"> <li>• Stay calm and evacuate the building immediately when you hear the fire alarm.</li> <li>• Along the escape route, close (don't lock) all the doors and windows you pass by so that you can cut the fire and smoke off from spreading to the other rooms</li> <li>• Go to the assembly point and alert your relevant supervisors that you are safe and outside the building</li> <li>• Adhere to any protocols put in place by your company</li> </ul>
22	What are the essential fire evacuation steps to be taken by every team, or company?	<ul style="list-style-type: none"> <li>• Know the location of the fire extinguishers in the workplace.</li> <li>• Every worker must be aware where the nearest extinguisher is at all times.</li> <li>• Know where your nearest emergency exits are. Know the difference between alarm signals to quickly recognize the situation.</li> <li>• Knowing all of these can make all the difference in saving lives and preventing unnecessary damage.</li> </ul>
23	How and where can standard/multi-purpose dry powder be used along with the risk or danger of this extinguisher?	<p><b>Application:</b> The powder 'knocks down' the flames. Safe to use on most kinds of fire. Multi-purpose powders are more effective, especially on burning solids; standard powders work well only on burning liquids.</p> <p><b>How to use:</b> Aim the jet at the base of the flames and briskly sweep it from side to side.</p> <p><b>Dangers:</b> The powder does not cool the fire well. Fires that seem to be out can re-ignite. Doesn't penetrate small spaces, like those inside burning equipment. The jet could spread burning fat or oil around.</p>
24	How and where can Water be used along with the risk or danger of this extinguisher?	<p><b>Application:</b> The water cools the burning material. You can only use water on solids, like wood or paper. Never use water on electrical fires or burning fat or oil.</p> <p><b>How to use:</b> Aim the jet at the base of the flames and move it over the area of the fire.</p> <p><b>Dangers:</b> The water can conduct electricity back to you. Water actually makes fat or oil fires worse – they can explode as the water hits them.</p>
25	How and where can CO <sub>2</sub> be used along with the risk or danger of this extinguisher?	<p><b>Application:</b> Displace oxygen with CO<sub>2</sub> (a non-flammable gas). Good for electrical fires as they don't leave a residue.</p> <p><b>How to use:</b> Aim the jet at the base of the flames and sweep it from side to side.</p> <p><b>Dangers:</b> Pressurized CO<sub>2</sub> is extremely cold. DO NOT TOUCH. Do not use in confined spaces.</p>

26	How and where can Foam/AFFF be used along with the risk or danger of this extinguisher?	<p><b>Application:</b> The foam forms a blanket or film on the surface of a burning liquid. Conventional foam works well only on some liquids, so it's not good for use at home, but AFFF is very effective on most fires except electrical and chip-pan fires.</p> <p><b>How to use:</b> For solids, aim the jet at the base of the flames and move it over the area of the fire. For liquids, don't aim the foam straight at the fire – aim it at a vertical surface or, if the fire is in a container, at the inside edge of the container.</p> <p><b>Dangers:</b> 'Jet' foam can conduct electricity back to you, though 'spray' foam is much less likely to do so. The foam could spread burning fat or oil around.</p>
27	There are many fire extinguishers that can be used for different purposes. In order to identify the types of extinguisher it is, there are colours given for it. Distinguish the different types of extinguishes by giving its respective colours.	<p>Standard/Multi-purpose dry powder: Blue</p> <p>Water: Red</p> <p>CO<sub>2</sub>: Black</p> <p>Foam/AFFF (Aqueous Film Forming Foam): White or cream</p>
28	What are the points to consider when using a fire extinguisher?	<ul style="list-style-type: none"> <li>• never use a fire extinguisher unless you have been trained to do so</li> <li>• do not use water extinguishers on electrical fires due to the risk of electric shock and explosion</li> <li>• do not use water extinguishers on oils and fats as this too can cause an explosion</li> <li>• do not touch the horn on CO<sub>2</sub> extinguishers as this can freeze burn the hands</li> <li>• do not use the CO<sub>2</sub> extinguisher in a small room as this could cause suffocation</li> <li>• Read the operating instructions on the extinguisher.</li> </ul>

## 2.PT=Practical Test

#	Practical Activity	Assess and evaluate performance of the student
1	Carry out steps involved in undertaking preparations needed to fight fires	<p>Students will be assessed while performing the practical that involved carrying out preparatory steps related to undertaking preparations to fight fires. Make sure the students perform preparation steps in sequence and follow the standard procedures of preparations required. Some of these include but not limited are as follows.</p> <ul style="list-style-type: none"> <li>✓ identify emergency alarms and match with response requirement</li> <li>✓ apply evacuation procedures</li> <li>✓ assess fire situation and notify authorities</li> <li>✓ identify, select and use firefighting equipment</li> </ul>
2	Simulate incidents of reporting fires	Carry out a role play activity where students will be taking reports of a fire. Make sure they ask the right questions and gather all the relevant information and data while documenting a fire incident.
3	Extinguish simple fires	Students should demonstrate the following competencies

		<ol style="list-style-type: none"> <li>1. Use the following accessories related to fire fighting <ul style="list-style-type: none"> <li>✓ Extinguishers</li> <li>✓ Fire blankets</li> <li>✓ Fire hose reels</li> <li>✓ Fire hydrants</li> <li>✓ Firefighting vehicles</li> <li>✓ Personal protection equipment (PPE)</li> </ul> </li> <li>2. Inspect and manage fire alarms</li> <li>3. Inspect serviceability of fire extinguishers</li> <li>4. Extinguish fires of different class using relevant firefighting procedures</li> </ol>
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### 3. OW=Observation at work Place

#	Activity to be observed	Assess and evaluate performance of the activities
1	Carry out steps involved in undertaking preparations needed to fight fires	<p>Make sure students undertake preparation steps in correct sequence and complete the following.</p> <ul style="list-style-type: none"> <li>✓ identify emergency alarms and match with response requirement</li> <li>✓ apply evacuation procedures</li> <li>✓ assess fire situation and notify authorities</li> <li>✓ identify, select and use firefighting equipment such as extinguishers, fire blankets, fire hose reels, fire hydrants, firefighting vehicles and use of personal protective equipment (PPE)</li> </ul>
2	Simulate incidents of reporting fires	Make sure the students capture all the relevant technical information and data about the ongoing fire and while taking report of fire incidents being reported .
3	Extinguish simple fires	<p>While extinguishing fire students should demonstrate competencies related to the use of fire extinguishers, fire blankets, fire hose reels, fire hydrants, firefighting vehicles, personal protection equipment (PPE).</p> <p>Students should also have relevant knowledge and skills to inspect and manage fire alarms</p> <p>Inspect and service fire extinguishers and constantly inspect and service them accordingly</p> <p>Attend live fire simulations and extinguish fires of different class using relevant firefighting procedures</p>

### 4. OQ=Oral Questioning

#	Questions	Answers
1	What activities need to be performed in preparation for extinguishing fire	<p>Students need to detail different preparatory procedures that includes uses of the firefighting equipment and they are as follows.</p> <ul style="list-style-type: none"> <li>✓ emergency alarms and response requirement</li> <li>✓ evacuation procedures</li> <li>✓ how notify authorities</li> </ul>

		✓ use firefighting equipment such as extinguishers, fire blankets, fire hose reels, fire hydrants, firefighting vehicles and use of personal protective equipment (PPE)
2	How to carry out initial notification and assessment	Make sure the students capture all the relevant technical information and data about the ongoing fire and while taking report of fire incidents being reported.
3	Explain steps involved in extinguishing fire	<p>Students should demonstrate competencies related to the use of fire extinguishers, fire blankets, fire hose reels, fire hydrants, firefighting vehicles, personal protection equipment (PPE).</p> <p>Students should explain knowledge and skills to inspect and manage fire alarms</p> <p>Students should explain to inspect and service fire extinguishers and constantly inspect and service them accordingly</p> <p>Should explain procedures related to fire.</p>

### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-7: Apply Science in water testing

Unit No	07
Unit Title	Apply Science in water testing
Unit Code	CONS06CR01V1/21

### Evidence Matrix

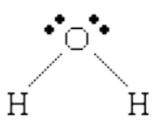
Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Develop basics of water science</b>							
Introduction to water science	✓	✓	✓	✓		✓	✓
General and Physical Chemistry	✓	✓	✓		✓	✓	✓
Chemical Processes,	✓	✓		✓	✓	✓	
Fluid Dynamics,	✓	✓	✓	✓		✓	✓
Water Quantity and Quality,	✓	✓	✓	✓		✓	✓
Soil and Water	✓	✓	✓		✓	✓	✓
General and Environmental Microbiology.	✓	✓		✓	✓	✓	
<b>2. Interpret Water Quality and treatment processes</b>							
Familiarize with water quality suitable for human consumption	✓	✓	✓	✓		✓	✓
Explain waterborne diseases	✓	✓	✓		✓	✓	✓
Identify various water treatment processes	✓	✓		✓	✓	✓	
Interpret chemistry related to water treatment	✓	✓	✓	✓		✓	✓
<b>3. Apply water science to determine quality of water</b>							
Identify chemical structure of water prior and after treatment	✓	✓	✓	✓		✓	✓
Perform simple tests to determine change of chemical structure	✓	✓	✓		✓	✓	✓
Interpret water standards from international organizations, especially WHO.	✓	✓		✓	✓	✓	
<b>4. Compile and present documentation</b>							
Assignments and reports compiled submitted by the students	✓	✓	✓	✓		✓	✓
Logs of the activities and other documents are compiled	✓	✓	✓		✓	✓	✓

#### Note:

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs,

PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

## 1. Written questions

#	Question	Answer
1	What is water?	Water, a substance composed of the chemical elements hydrogen and oxygen and existing in gaseous, liquid, and solid states. It is one of the most plentiful and essential of compounds.
2	How does water occurs?	Water occurs as a liquid on the surface of Earth under normal conditions, which makes it invaluable for transportation, for recreation, and as a habitat for a myriad of plants and animals.
3	Explain the structure of liquid water.	The water molecule is composed of two hydrogen atoms, each linked by a single chemical bond to an oxygen atom. Most hydrogen atoms have a nucleus consisting solely of a proton. Two isotopic forms, deuterium and tritium, in which the atomic nuclei also contain one and two neutrons, respectively, are found to a small degree in water.
4	State what heavy water is called as?	Deuterium oxide (D <sub>2</sub> O), called heavy water, is important in chemical research and is also used as a neutron moderator in some nuclear reactors.
5	What is the melting and boiling point of water?	Melting point, 0 °C (32 °F), and boiling point, 100 °C (212 °F), are much higher than would be expected by comparison with analogous compounds, such as hydrogen sulfide and ammonia.
6	What is hydrogen bonds?	Hydrogen atoms in water molecules are attracted to regions of high electron density and can form weak linkages, called hydrogen bonds.
7	Illustrate the electron arrangement of the water molecule.	
8	Explain the structure of ice.	In the solid state (ice), intermolecular interactions lead to a highly ordered but loose structure in which each oxygen atom is surrounded by four hydrogen atoms; two of these hydrogen atoms are covalently bonded to the oxygen atom, and the two others (at longer distances) are hydrogen bonded to the oxygen atom's unshared electron pairs.
9	What is the characteristics ability of water?	The characteristic ability of water to behave as a polar solvent (dissolving medium) changes when water is subjected to high temperatures and pressures. As water becomes hotter, the molecules seem much more likely to interact with nonpolar molecules.
10	What are the physical properties of water?	Most of the physical properties of water are quite atypical. Given the low molar mass of its constituent molecules, water has unusually large values of viscosity, surface tension, heat of vaporization, and entropy of vaporization, all of which can be ascribed to the extensive hydrogen bonding interactions present in liquid water.
11	What is the most common method for specifying the acidity of a solution?	The most common method for specifying the acidity of a solution is its pH.

12	Write Oxidation-reduction reaction formula?	$2\text{Na}(s) + 2\text{H}_2\text{O}(l) \rightarrow 2\text{Na}^+(\text{aq}) + 2\text{OH}^-(\text{aq}) + \text{H}_2(g)$
13	State two noble metals that do not react with water at all?	Gold and silver
14	What is fluids?	A fluid is a substance that can flow when external force is applied on it. The term fluids include both liquids and gases.
15	What is fluid dynamics?	Fluid dynamics is the study of how fluids behave when they're in motion.
16	How does fluids flow?	Fluids can flow steadily, or be turbulent. In steady flow, the fluid passing a given point maintains a steady velocity. For turbulent flow, the speed and or the direction of the flow varies. In steady flow, the motion can be represented with streamlines showing the direction the water flows in different areas. The density of the streamlines increases as the velocity increases.
17	What is the difference between liquids and gases?	Liquids are generally incompressible, meaning that they don't change volume much in response to a pressure change; gases are compressible, and will change volume in response to a change in pressure.
18	What is the equation of continuity?	The equation of continuity states that for an incompressible fluid flowing in a tube of varying cross-section, the mass flow rate is the same everywhere in the tube.
19	What are the ways to make fluid flow through a pipe?	One way is to tilt the pipe so the flow is downhill, in which case gravitational kinetic energy is transformed to kinetic energy. The second way is to make the pressure at one end of the pipe larger than the pressure at the other end.
20	What does the Bernoulli's equation do?	Relating the pressure, velocity, and height of a fluid at one point to the same parameters at a second point.
21	How is water quality treated as?	Water quality is treated here as an integral dimension of water availability in an effort to underscore the fact that water quality will have to be managed effectively to prevent water supplies from dwindling over time.
22	How are non-point source contaminants delivered?	Nonpoint source contaminants are delivered to waters via runoff, shallow groundwater, and atmospheric deposition.
23	What are mineral particles?	Particles originate from the degradation of rocks; they are called mineral particles
24	What are organic particles?	Originate from residues of plants or animals (rotting leaves, pieces of bone, etc.), these are called organic particles (or organic matter).
25	What are common living material found in the soil?	beetles, worms, larvae etc.
26	What are the basic types of aggregate arrangements?	Granular, blocky, prismatic, and massive structure.
27	What is infiltration?	When rain or irrigation water is supplied to a field, it seeps into the soil.
28	Compare infiltration rate.	The infiltration of water into the sand is faster than into the clay. The sand is said to have a higher infiltration rate.

29	What is the infiltration of a soil?	The infiltration rate of a soil is the velocity at which water can seep into it. It is commonly measured by the depth (in mm) of the water layer that the soil can absorb in an hour.
30	What happens in coarse soils in infiltration?	In coarse soils, the rain or irrigation water enters and moves more easily into larger pores; it takes less time for the water to infiltrate into the soil. In other words, infiltration rate is higher for coarse textured soils than for fine textured soils.
31	What is groundwater table?	Part of the water applied to the soil surface drains below the rootzone and feeds deeper soil layers which are permanently saturated; the top of the saturated layer is called groundwater table or sometimes just water table.
32	What are the 4 major bacteria groups classified according to their feeding habits?	<p>Saprophytic — these feed on dead organic matter and are commonly called "decomposers." Saprophytic bacteria play a significant role in water polluted with biodegradable wastes because they use up great amounts of oxygen as they break down the wastes.</p> <p>Commensal — Commensal bacteria take food from living organism but in the process provide a valuable service to that organism. For example, bacteria present in the intestines of humans assist in the digestion of many foods.</p> <p>Parasitic -- Parasites live off another organism at the expense of its health. All pathogenic bacteria fall into this category.</p> <p>Autotrophic — These bacteria make their own food from simpler inorganic substances. Some autotrophic bacteria contain chlorophyll and can carry on photosynthesis.</p>
33	What is epidemiological method?	The epidemiological method is a very useful tool in setting goals of environmental management for protecting public health from environmental organisms, and chemical and physical factors.
34	What are waterborne diseases?	Waterborne diseases are illnesses caused by microscopic organisms, like viruses and bacteria that are ingested through contaminated water or by coming in contact with feces.
35	Name waterborne diseases.	<ul style="list-style-type: none"> <li>• Typhoid Fever</li> <li>• Cholera</li> <li>• Giardia</li> <li>• Dysentery</li> <li>• Hepatitis A</li> </ul>
36	How to perform simple test such as copper (II) sulfate test for water?	<p>Pure copper(II) sulfate is white. It is also known as <b>anhydrous copper(II) sulfate</b> because it has no water in it. When water is present in a sample of copper(II) sulfate it turns blue. It is still a dry solid, because the individual water molecules are trapped within the ionic lattice surrounding the copper(II) ions. Solutions of copper(II) sulfate are also blue. This colour change can be used to detect the presence of water (or water vapour).</p> $\text{anhydrous copper(II) sulfate} + \text{water} \rightleftharpoons \text{hydrated copper(II) sulfate}$ $\text{CuSO}_4(\text{s}) (\text{white}) + 5\text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{CuSO}_4 \cdot 5\text{H}_2\text{O}(\text{s}) (\text{blue})$

37	What color water changes to when blue anhydrous cobalt (II) chloride is presence?	Water can also be detected using blue anhydrous cobalt (II) chloride. This turns pink in the presence of water.
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## 2. PT=Practical Test

#	Activity to be performed	Activity to be evaluated and assessed
1	Student Assignments	Students need to undertake assignments related to manage the day-to-day running of science teaching laboratories and the preparation of practical experiments, demonstrations and field trips as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas. <ul style="list-style-type: none"> <li>✓ Develop basics of water science</li> <li>✓ Interpret Water Quality and treatment processes</li> <li>✓ Apply water science to determine quality of water</li> <li>✓ Compile and present documentation</li> </ul>
3	Review Assessment papers	Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following. <ul style="list-style-type: none"> <li>✓ Develop basics of water science</li> <li>✓ Interpret Water Quality and treatment processes</li> <li>✓ Apply water science to determine quality of water</li> <li>✓ Compile and present documentation</li> </ul>
4	Demonstrate how to check the pH scale level of different element or components.	The student is expected to follow the correct step-by step process on To check the different elements or components. The elements which should be assessed are: <ol style="list-style-type: none"> <li>1. Neutral level</li> <li>2. Acidic level</li> <li>3. Basic level</li> </ol>

## 3. OW =Observation at work Place

#	Activity to be observed	Evaluative Assessment of the observed activity
1	Assessment papers	While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students. <ul style="list-style-type: none"> <li>✓ Develop basics of water science</li> <li>✓ Interpret Water Quality and treatment processes</li> <li>✓ Apply water science to determine quality of water</li> <li>✓ Compile and present documentation</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical

		activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to manage the day-to-day running of science teaching laboratories and the preparation of practical experiments, demonstrations and field trips.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged. .</p>
4	Performing Copper (II) sulfate test for	As the students attend the practical test to demonstrate how to conduct the experiment to prove the presence of water, make sure the student use the proper techniques and the information he shared is accurate.

#### 4. OQ=Oral Questioning

#	Questions	Answers
1	Develop basics of water science	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Introduction to water science</li> <li>✓ General and Physical Chemistry</li> <li>✓ Chemical Processes,</li> <li>✓ Fluid Dynamics,</li> <li>✓ Water Quantity and Quality,</li> <li>✓ Soil and Water</li> <li>✓ General and Environmental Microbiology</li> </ul>
2	Interpret water quality and treatment processes	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Familiarize with water quality suitable for human consumption</li> <li>✓ Explain waterborne diseases</li> <li>✓ Identify various water treatment processes</li> <li>✓ Interpret chemistry related to water treatment</li> </ul>
3	Apply water science to determine quality of water	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify chemical structure of water prior and after treatment</li> <li>✓ Perform simple tests to determine change of chemical structure</li> <li>✓ Interpret water standards from international organizations, especially WHO.</li> </ul>
4	Compile and present documentation	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Assignments and reports compiled submitted by the students</li> <li>✓ Logs of the activities and other documents are compiled</li> </ul>

#### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.  Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.

## Unit-8: Apply mathematics in water testing

Unit No                      08  
 Unit Title                    Apply mathematics in water testing  
 Unit Code                    **CONS06CR02V1/21**

### Evidence Matrix

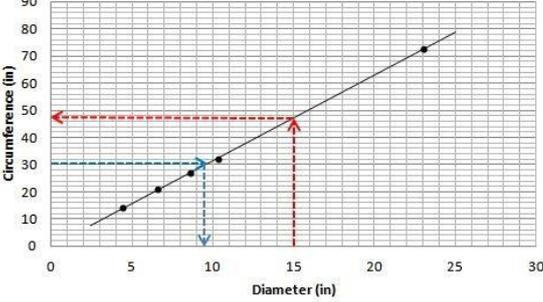
Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Identify and Interpret formulae for process calculations</b>							
Required calculation method is identified to suit the application, including selection of relevant arithmetic operations and/or formulae.	✓	✓	✓	✓		✓	✓
Units of measurement are identified and used	✓	✓	✓		✓	✓	✓
<b>2. Interpret and present graphical representations of mathematical information</b>							
Information presented in mathematical symbols, graphs and charts is correctly interpreted	✓	✓	✓	✓		✓	✓
Information is presented clearly using mathematical symbols, graphs and charts	✓	✓	✓		✓	✓	✓
<b>3. Perform calculations</b>							
Formulae are used correctly to perform calculations.	✓	✓	✓	✓		✓	✓
Use electronic calculators or spreadsheets to perform water industry calculations.	✓	✓	✓		✓	✓	✓

**Note:**

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

## 1. Written questions

#	Question	Answer																
1	What is composed in a fraction?	A fraction is composed of three items: two numbers and a line. The number on the top is called the <i>numerator</i> , the number on the bottom is called the <i>denominator</i> , and the line in between them means divided.																
2	What are key points in solving fractions?	Fractions are used to express a portion of a whole A fraction consists of two numbers separated by a horizontal line or a diagonal line — for example, 1/6 The bottom number, called the <i>denominator</i> , indicates the number of equal-sized pieces into which the entire entity has been cut The top number, called the <i>numerator</i> , indicates the number of pieces Like all other math functions, dealing with fractions is governed by rules or principles																
3	Answer the following questions.	Reduce the following to their simplest terms: 2/4 = _____ 14/18 = _____ 3/4 = _____ 6/10 = _____ 9/18 = _____ 17/29 = _____ 24/32 = _____																
4	The plant operator removes 6500 gallons (gal) of biosolids from the settling tank. The biosolids contain 325 gal of solids. What is the percent solids in the biosolids?	Answer will must give in 2 decimal point.																
5	What does an average?	An <i>average</i> represents several different measurements as a single number.																
6	The operator of a waterworks or wastewater treatment plant takes a chlorine residual measurement every day and part of the operating log is Find the mean.	Add up the seven chlorine residual readings: 0.9 + 1.0 + 0.9 + 1.3 + 1.1 + 1.4 + 1.2 = 7.8. Next, divide by the number of measurements (in this case, seven): 7.8 ÷ 7 = 1.11. The mean chlorine residual for the week was 1.11 mg/L.																
7	In our chlorine residual example, what is the median?  <b>TABLE 6.1</b> <b>Daily Chlorine Residual Results</b>  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Day</th> <th>Chlorine Residual (mg/L)</th> </tr> </thead> <tbody> <tr> <td>Monday</td> <td>0.9</td> </tr> <tr> <td>Tuesday</td> <td>1.0</td> </tr> <tr> <td>Wednesday</td> <td>0.9</td> </tr> <tr> <td>Thursday</td> <td>1.3</td> </tr> <tr> <td>Friday</td> <td>1.1</td> </tr> <tr> <td>Saturday</td> <td>1.4</td> </tr> <tr> <td>Sunday</td> <td>1.2</td> </tr> </tbody> </table>	Day	Chlorine Residual (mg/L)	Monday	0.9	Tuesday	1.0	Wednesday	0.9	Thursday	1.3	Friday	1.1	Saturday	1.4	Sunday	1.2	Arrange the values in ascending order: 0.9 0.9 1.0 1.1 1.2 1.3 1.4 The middle number is the fourth one (1.1), so, the median chlorine residual is 1.1 mg/L.
Day	Chlorine Residual (mg/L)																	
Monday	0.9																	
Tuesday	1.0																	
Wednesday	0.9																	
Thursday	1.3																	
Friday	1.1																	
Saturday	1.4																	
Sunday	1.2																	

8	<p>A conversion factor changes known quantities in one unit of measure to an equivalent quantity in another unit of measure. To make the conversion from one unit to another, what two things should you be aware of?</p>	<ul style="list-style-type: none"> <li>• The exact number that relates the two units</li> <li>• Whether to multiply or divide by that number</li> </ul>												
9	<p>What are graphs?</p>	<p>Graphs can also be used to explore relationships between sets of data, such as the way in which a sunflower grows over a season.</p>												
10	<p>Draw a graph. All the measurements are in inches</p> <table border="0" data-bbox="268 678 663 913"> <thead> <tr> <th>Diameter (in.)</th> <th>Circumference (in.)</th> </tr> </thead> <tbody> <tr> <td>4.4</td> <td>14.1</td> </tr> <tr> <td>6.6</td> <td>20.9</td> </tr> <tr> <td>8.6</td> <td>27</td> </tr> <tr> <td>10.3</td> <td>32.3</td> </tr> <tr> <td>23.0</td> <td>72.8</td> </tr> </tbody> </table> <p>On some graph paper or in your notebook, plot these points on a graph with the diameter on the horizontal (x) axis and the circumference on the vertical (y) axis. Draw a straight line through the points.</p> <p>(b) Use your graph from part (a) to estimate the circumference of a circle of diameter 15 inches.</p>	Diameter (in.)	Circumference (in.)	4.4	14.1	6.6	20.9	8.6	27	10.3	32.3	23.0	72.8	<p style="text-align: center;"><b>Graph to Show the Circumference of Household Objects</b></p>  <p><i>Answer:</i> To find the circumference of a circle of diameter 15 inches, find 15 on the horizontal axis. From this point, draw a vertical line to meet the graph. Then draw a horizontal line across to the vertical axis and read off the value. The circumference of a circle of diameter 15 in. is about 47 inches.</p>
Diameter (in.)	Circumference (in.)													
4.4	14.1													
6.6	20.9													
8.6	27													
10.3	32.3													
23.0	72.8													
11	<p>State different types of Bar charts.</p>	<ul style="list-style-type: none"> <li>• Component Bar chart</li> <li>• Comparative Bar chart</li> </ul>												
12	<p>What is a Pie chart? Give an example.</p>	<p>Pie charts are often used where you want to compare different proportions in the data set. The area of each slice (or sector) of the pie represents the proportion in that particular category.</p> <p>For example, the pie chart below illustrates the favourite type of exercise for a group of people.</p>												
13	<p>How can you read a chart or graph?</p>	<ul style="list-style-type: none"> <li>• Read the title of the chart and check the source of the data.</li> <li>• Check the axes. What is being measured? What units have been used?</li> <li>• Examine the scales. How should these be interpreted? What does each interval represent?</li> <li>• Check the key or legend. What does the shading or line represent?</li> </ul>												

		<ul style="list-style-type: none"> <li>Finally, examine the chart or graph itself, reading off the information that you need. Are you looking for a specific value or a trend or some other information?</li> </ul>
1 4	How to draw graphs and charts?	<ul style="list-style-type: none"> <li>Include a clear title—so that your reader can see at a glance whether this chart is the one they are interested in.</li> <li>Include the source of the data—so that your reader can make further checks on how the data was collected if they wish.</li> <li>Choose the simplest graph or chart that illustrates the point you wish to emphasize.</li> <li>Label axes with both words and units.</li> <li>Mark scales clearly, choosing a scale that is easy to interpret.</li> <li>Include a legend if you have used more than one type of shading or line.</li> </ul>
1 5	<p>A small lake has an average length of 300 ft and an average width of 95 ft. If the maximum depth of the lake is 22 ft, what is the estimated gallons volume of the lake?</p> <p><b>Note:</b>For small ponds and lakes, the average depth is generally about 0.4 times the greatest depth; therefore, to estimate the average depth, measure the greatest depth and multiply that number by 0.4.</p>	<p>First, the average depth of the lake must be estimated:</p> $\begin{aligned} \text{Estimated average depth (ft)} &= \text{greatest depth (ft)} \times 0.4 \text{ depth (ft)} \\ &= 22 \text{ ft} \times 0.4 \text{ ft} \\ &= 8.8 \text{ ft} \end{aligned}$ <p>The lake volume can then be determined using Equation 15.16:</p> $\begin{aligned} \text{Volume (gal)} &= 300 \text{ ft} \times 95 \text{ ft} \times 8.8 \text{ ft} \times 7.48 \text{ cu ft} \\ &= 1,875,984 \text{ gal} \end{aligned}$
1 6	For algae control in a small pond, a dosage of 0.5 mg/L copper is desired. The pond has a volume of 15 MG. How many pounds of copper sulfate will be required? (Copper sulfate contains 25% available copper.)	$\begin{aligned} \text{Copper sulfate (lb)} &= \frac{0.5 \text{ mg/L} \times 15 \text{ MG} \times 8.34 \text{ lb/gal}}{\frac{25}{100}} \\ &= 250 \text{ lb copper sulfate} \end{aligned}$
1 7	A small lake has a surface area of 6.0 acres. If the desired copper sulfate dose is 5.2 lb/ac, how many pounds of copper sulfate are required?	$\begin{aligned} \text{Copper sulfate (lb)} &= \frac{5.2 \text{ lb copper sulfate} \times 6.0 \text{ ac}}{1 \text{ ac}} \\ &= 31.2 \text{ lb copper sulfate} \end{aligned}$

## 2. PT=Practical Test

#	Practical Activity	Additional Details
1	Student Assignments	Students need to undertake assignments related perform calculations for water industry related operations, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas. <ul style="list-style-type: none"> <li>✓ Identify and Interpret formulae for process calculations</li> <li>✓ Interpret and present graphical representations of mathematical information</li> <li>✓ Perform calculations</li> </ul>
3	Review Assessment papers	Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following. <ul style="list-style-type: none"> <li>✓ Identify and Interpret formulae for process calculations</li> <li>✓ Interpret and present graphical representations of mathematical information</li> <li>✓ Perform calculations</li> </ul>
4	Demonstrate how to draw a plotting (straight line) graph.	The student is expected to follow the correct step-by step process plot a graph. The elements which should be assessed are: <ul style="list-style-type: none"> <li>✓ Plot these points on a graph with the diameter on the horizontal (x) axis and the circumference on the vertical (y) axis.</li> <li>✓ Draw a straight line through the points.</li> <li>✓ Estimate the circumference of a circle of diameter 15 inches.</li> <li>✓ Estimate the radius of a circle of circumference 30 inches.</li> </ul>

## 3. OW =Observation at work Place

#	Observation Area	Additional details of the observation
1	Assessment papers	While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students. <ul style="list-style-type: none"> <li>✓ Identify and Interpret formulae for process calculations</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Interpret and present graphical representations of mathematical information</li> <li>✓ Perform calculations</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to perform calculations for water industry related operations.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged. .</p>
4	Interpreting and reading the chart or graphic	As the students attend the practical test to read a chart or graphs, make sure the student use the proper technical terms and the information he shared is accurate.

#### 4. OQ=Oral Questioning

#	Questions	Assess and evaluating parameters
1	Identify and Interpret formulae for process calculations	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Required calculation method is identified to suit the application, including selection of relevant arithmetic operations and/or formulae.</li> <li>✓ Units of measurement are identified and used correctly.</li> </ul>
2	Interpret and present graphical representations of mathematical information	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Information presented in mathematical symbols, graphs and charts is correctly interpreted</li> <li>✓ Information is presented clearly using mathematical symbols, graphs and charts</li> </ul>
3	Perform calculations	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Formulae are used correctly to perform calculations.</li> <li>✓ Use electronic calculators or spreadsheets to perform water industry calculations.</li> </ul>

## 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.  Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.

## Unit-9: Handle dangerous goods/hazardous substances

Unit No 09  
 Unit Title Handle dangerous goods/hazardous substances  
 Unit Code CONS06CR03V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources*
<b>1. Identify requirements for working with dangerous goods and/or hazardous substances</b>							
Dangerous goods/hazardous substances are identified from information including class labels, manifests and other documentation	✓	✓	✓	✓		✓	✓
Job hazards are identified and required action is taken to minimise, control or eliminate identified hazards	✓	✓	✓		✓	✓	✓
Storage requirements for dangerous goods/hazardous substances are identified and applied	✓	✓		✓	✓	✓	
Legislative requirements for dangerous goods/hazardous substances are used to plan work activities	✓	✓	✓	✓		✓	✓
Handling procedures for different classes and characteristics of goods are observed	✓	✓	✓	✓		✓	✓
Confirmation is sought from relevant personnel where dangerous goods/hazardous materials do not appear to be appropriately marked	✓	✓	✓		✓	✓	✓
<b>2. Confirm site incident procedures</b>							
Incident reporting processes are identified	✓	✓	✓	✓		✓	✓
Emergency equipment is located and checked in accordance with workplace procedures and statutory regulations	✓	✓	✓		✓	✓	✓
Emergency procedures are identified and confirmed	✓	✓		✓	✓	✓	
<b>3. Select handling techniques</b>							
Load handling and shifting procedures are selected in accordance with identified requirements for particular goods	✓	✓	✓	✓		✓	✓
Handling equipment is checked for conformity with workplace requirements and manufacturer guidelines	✓	✓	✓		✓	✓	✓

Suitable signage or placards are checked for compliance with workplace procedures, as required	✓	✓		✓	✓	✓	
<b>4. Dispose of dangerous wastes</b>							
Identify different types of dangerous wastes	✓	✓	✓	✓		✓	✓
Select proper disposal procedures	✓	✓	✓		✓	✓	✓
Dispose the wastes accordingly	✓	✓		✓	✓	✓	

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies, FB= Feedback from Fellow Members and RP= Role Play.

**1. Written questions**

#	Question	Answer
1	What are hazardous chemicals?	Hazardous chemicals are any substance, mixture or article that satisfies the criteria for a hazard class in the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) that are used in the workplace.
2	What are dangerous good?	Dangerous goods are substances, mixtures or articles that, because of their physical, chemical (physicochemical) or acute toxicity properties, present an immediate hazard to people, property or the environment.
3	What are hazard statements and give examples?	<ul style="list-style-type: none"> <li>• Describes the nature and severity of chemical hazard.</li> <li>• Categorised in relation to physical/health/environmental hazards.</li> <li>• Change from Risk Phrases.</li> </ul> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Highly flammable liquid and vapour</li> <li>• May cause respiratory irritation</li> <li>• May cause cancer</li> </ul>
4	What are labelling requirements?	Labels are required to be affixed on containers or pipe-work that contain hazardous chemicals. Additionally, non-hazardous chemicals should also be labelled to distinguish them from those that are hazardous. Labels display information on any hazards associated with the hazardous chemical, plus instructions and information on the safe storage, handling, use and disposal of the chemical.
5	How can you assist emergency services and respond of Manifest and Placarding requirements to any incidents?	Notifying them of the type, quantity, and locations of hazardous chemicals on site.
6	What important factors must the fire protection system includes?	Fire detection, fire suppression and firefighting equipment, which may be fixed or portable.
7	What must be identified in hazardous chemical stored in packages?	Hazardous chemicals stored in packages must be: <ul style="list-style-type: none"> <li>• closed when not in use</li> </ul>

		<ul style="list-style-type: none"> <li>• stored on surfaces which will not deteriorate if the package is damaged resulting in a spill</li> <li>• stored in such a way to minimise the risk of falling, and</li> <li>• positioned in such a way so that leakage will not affect other hazardous chemicals.</li> </ul>
8	Explain briefly what a secondary containment is.	Areas where hazardous chemicals are used and stored should include secondary containment to capture the maximum possible spill. This can be in the form of permanent or temporary bunding, spill trays, secondary containers, etc.
9	What factors should be looked out when dispensing dangerous goods away from other incompatible chemicals?	<ul style="list-style-type: none"> <li>• If you have separate dangerous goods storage facilities for each dangerous goods class, a safe location for dispensing dangerous goods would be inside the facility where the specific dangerous goods class is being stored.</li> <li>• This location will be away from ignition sources and other incompatible chemicals.</li> <li>• When dangerous goods are being dispensed, it is important to do so in a bunded area to ensure that any spills are safely contained.</li> <li>• It is also essential to have a spill response kit available in the area where the dangerous goods are being dispensed. This will allow any spills that may occur to be safely cleaned up.</li> </ul>
10	What is route of exposure?	Toxic substances are substances that will cause harm to human health if they enter the body. The means by which toxic substances enter your body are called the routes of exposure.
11	What are the 3 main routes of exposure to toxic substances that can cause harm to human health?	<p>These include:</p> <ul style="list-style-type: none"> <li>• Ingestion</li> <li>• Skin contact</li> <li>• Inhalation</li> </ul>
12	What are corrosive substances?	Corrosive substances are substances that will dissolve other materials such as stone, metal and human flesh.
13	What are safety data sheets?	Safety data sheets are documents that outline the specific reactivity, fire, health and environmental hazards associated with a particular substance. The safety data sheet will also outline the basic storage and handling requirements for the particular substance.
14	What is an important factor to be aware before handling any dangerous goods?	Before dangerous goods are handled, it is very important to be aware of the specific chemical and physical properties associated with the dangerous goods that you are handling.
15	What are the responsibilities of supervisor/manager nominated to investigate if an incident occurs?	<ol style="list-style-type: none"> <li>1. ensure an investigation commences as soon as possible after an incident occurs and in consultation with: <ul style="list-style-type: none"> <li>• the injured/involved person (where practical)</li> <li>• the HSR (where applicable)</li> <li>• the campus WHS Consultant</li> <li>• any other personnel relevant to the matter</li> </ul> </li> <li>2. establish that the incident site is safe prior to investigating to prevent further injury. Refer to above</li> </ol>

		<p>to ensure an incident site is not entered into where a serious notifiable incident has occurred.</p> <ol style="list-style-type: none"> <li>3. gather factual information to describe the circumstances, for example what happened, what occurred leading up to the incident, other contributing factors, who else was involved etc.</li> <li>4. analyse the factual information gathered to identify contributing factors and underlying causes relating to potential deficiencies in the following: <ul style="list-style-type: none"> <li>• System – a method, a set of independent and interrelated elements that function as a whole i.e. workplace procedures or processes that specify the way in which something is implemented</li> <li>• Design – design of plant/machinery/equipment, design of work task/processes</li> <li>• Environment – the surroundings in which work is performed i.e. work environment / work conditions / naturally occurring environmental conditions</li> <li>• Behaviour – human factors including inexperience / complacency / work pressure / fatigue, medical illness etc.</li> </ul> </li> </ol>
16	What are the information that you should know when are orientated to any new job site?	<ul style="list-style-type: none"> <li>• Location of emergency exits</li> <li>• Location of first aid supplies or the procedures to call for an attendant</li> <li>• Location of fire extinguishers</li> <li>• Evacuation procedures and muster stations</li> <li>• Any hazards present on the site</li> </ul>
17	What are the three components that must be present before a fire can occur?	<ul style="list-style-type: none"> <li>• Fuel (a combustible material such as wood, gasoline, paper, or cloth)</li> <li>• Heat (sufficient to raise the fuel to its ignition temperature)</li> <li>• Oxygen, usually in the form of air (to sustain combustion)</li> </ul>
18	Here are the combustion speed. Give an example of each speed of combustion. (Very slow, slow, fast and extremely fast)	<p>Very slow: The rusting of iron  Slow: The spontaneous heating of materials such as oil soaked rags  Fast: The burning of paper or wood  Extremely fast: The exploding of gunpowder upon ignition</p>
19	The nature of flammable liquids makes them very vulnerable to ignition. What are storage precautions to be followed?	<ul style="list-style-type: none"> <li>• All containers of flammable liquids must be of an approved type and clearly marked.</li> <li>• All containers must have secure capping devices.</li> <li>• Open flames or lit cigarettes must be prohibited within or near any liquid-gas storage area.</li> <li>• Where drums are used as containers, they must have taps and a drip tray.</li> <li>• Transportation must only take place while containers are sealed.</li> <li>• All empty containers must be stored on end.</li> <li>• Spills must be cleaned up or covered with sand.</li> </ul>

20	What are following points to look when transferring hazardous chemicals?	<ul style="list-style-type: none"> <li>• an appropriate area should be set aside for the purposes of transfer or decanting of hazardous chemicals products</li> <li>• vapour or dust generation during transfer should be minimised</li> <li>• where static electricity is generated, appropriate controls measures should be adopted to minimise the charge build up eg earthing, bonding or relaxation</li> <li>• ensure the suitability of pipe work, attachments and associated safety systems in areas where the risk elimination or control measures have been proposed</li> </ul>
21	Mention 5 principles that should be applied for the safe use of hand trucks.	<ul style="list-style-type: none"> <li>• load weight should be within the Rated Load (RL) of the particular trolley</li> <li>• load should be stable and have a centre of gravity not higher than handle height</li> <li>• keep the centre of gravity low by placing heavier items below the lighter ones</li> <li>• load height should be such that the operator has clear visibility in the direction of travel</li> <li>• place the load so that it will not slip, shift or fall, and secure it with straps if they are provided</li> </ul>
22	Where a hazardous chemical is packaged in a container that is too small to attach a label with information that is required of hazardous chemical labels. What is the minimum requirements of the label?	<ul style="list-style-type: none"> <li>• Written in English (legibly)</li> <li>• The product identifier</li> <li>• Name, address and business telephone number of manufacturer or importer</li> <li>• Hazard statement OR pictogram</li> <li>• Any other element that is reasonably practicable to include (priority should be given to elements relating to the most significant hazards)</li> </ul>
23	What kind of characteristics a waste can exhibit which could be characteristically hazardous?	<ul style="list-style-type: none"> <li>• Ignitability;</li> <li>• Corrosivity;</li> <li>• Reactivity; or</li> <li>• Toxicity.</li> </ul>
24	What instruction should be followed while packaging hazardous waste?	<ul style="list-style-type: none"> <li>• Use a leak-proof container that will safely contain the contents. Open chemical containers, plastic bags or culture dishes will not be accepted.</li> <li>• Containers must be closable.</li> <li>• The container shall not be overfilled with liquid waste.</li> <li>• Empty space of at least five percent of the container volume shall be left to allow for thermal expansion.</li> <li>• Be suspicious of any pressure build-up inside the container (e.g. pirahna waste)</li> <li>• If this is a concern when closing the container, use a cap designed to allow venting of over-pressure or do not secure the cap tightly and if appropriate, place the container inside a fume hood or other well-ventilated</li> </ul>

		area until the chemical reaction has reached equilibrium and is removed by the waste collector.
25	What are the guidelines to follow when minimizing the various potential hazards when discarding broken or unserviceable glassware?	<ul style="list-style-type: none"> <li>• Dispose of broken laboratory glassware in designated broken glass containers only. These shall be puncture proof, double-lined cardboard boxes or other containers specifically designed for the disposal of glassware not weighing more than 20 pounds when full. They can be obtained from various laboratory equipment distributors;</li> <li>• When the box is full, securely seal with tape to prevent any leaks;</li> <li>• Label the container as "TRASH";</li> <li>• Never use broken glassware boxes for the disposal of sharps, medical/biohazardous materials or liquid wastes;</li> </ul>
26	What should be checked in all personnel handling broken glass containers?	<ul style="list-style-type: none"> <li>• Check the weight and integrity of the container prior to lifting;</li> <li>• Wear safety glasses and work gloves when handling the container;</li> <li>• Do not remove the box if you see a red or orange liner;</li> <li>• Do not remove the box if open, compromised, wet or suspected of containing chemicals; and</li> <li>• Immediately contact your supervisor with any issues</li> </ul>
27	What are the packing materials that could be used in secondary containers?	Any packing materials, such as vermiculite, perlite, clay, Styrofoam, etc., may be placed in the regular trash unless it was contaminated with the chemical as a result of container breakage or leak.

## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	Students need to undertake assignments related to handle dangerous goods and hazardous substances in accordance with relevant (WHS)/ (OHS) regulations concerning the safe handling of dangerous goods and hazardous substances, within the transport and logistics industry, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	<p>Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas.</p> <ul style="list-style-type: none"> <li>✓ Identify requirements for working with dangerous goods and/or hazardous substances</li> <li>✓ Confirm site incident procedures</li> <li>✓ Select handling techniques</li> <li>✓ Dispose of dangerous wastes</li> </ul>

3	Review Assessment papers	<p>Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following.</p> <ul style="list-style-type: none"> <li>✓ Identify requirements for working with dangerous goods and/or hazardous substances</li> <li>✓ Confirm site incident procedures</li> <li>✓ Select handling techniques</li> <li>✓ Dispose of dangerous wastes</li> </ul>
4	Demonstrate how to transfer hazardous chemicals?	<p>The student is expected to follow the correct step-by step process to creating and maintaining starters. The elements which should be assessed are:</p> <ol style="list-style-type: none"> <li>1. an appropriate area should be set aside for the purposes of transfer or decanting of hazardous chemicals products</li> <li>2. vapour or dust generation during transfer is minimized</li> <li>3. where static electricity is generated, appropriate controls measures should be adopted</li> <li>4. ensure the suitability of pipe work, attachments and associated safety systems in areas</li> </ol>

### 3. OW =Observation at work Place

#	Questions	Answers
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Identify requirements for working with dangerous goods and/or hazardous substances</li> <li>✓ Confirm site incident procedures</li> <li>✓ Select handling techniques</li> <li>✓ Dispose of dangerous wastes</li> </ul>
2	Log Books	<p>Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.</p>
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to handle dangerous goods and hazardous substances in accordance with relevant (WHS)/ (OHS) regulations concerning the safe handling of dangerous goods and hazardous substances, within the transport and logistics industry.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged. .</p>

4	Demonstrate the process of entering safety data sheets.	As the students attend the practical test to outline the specific reactivity, fire, health and environmental hazards associated with a particular substance, make sure the student outline the basic storage and handling requirements for the particular substance.
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#### 4. OQ=Oral Questioning

#	Questions	Answers
1	Identify requirements for working with dangerous goods and/or hazardous substances	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Dangerous goods/hazardous substances are identified from information including class labels, manifests and other documentation</li> <li>✓ Job hazards are identified and required action is taken to minimise, control or eliminate identified hazards</li> <li>✓ Storage requirements for dangerous goods/hazardous substances are identified and applied</li> <li>✓ Legislative requirements for dangerous goods/hazardous substances are used to plan work activities</li> <li>✓ Handling procedures for different classes and characteristics of goods are observed</li> <li>✓ Confirmation is sought from relevant personnel where dangerous goods/hazardous materials do not appear to be appropriately marked</li> </ul>
2	Confirm site incident procedures	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Incident reporting processes are identified</li> <li>✓ Emergency equipment is located and checked in accordance with workplace procedures and statutory regulations</li> <li>✓ Emergency procedures are identified and</li> <li>✓ confirmed</li> </ul>
3	Select handling techniques	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Load handling and shifting procedures are selected in accordance with identified requirements for particular goods</li> <li>✓ Handling equipment is checked for conformity with workplace requirements and manufacturer guidelines</li> <li>✓ Suitable signage or placards are checked for compliance with workplace procedures, as required</li> </ul>
4	Dispose of dangerous wastes	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify different types of dangerous wastes</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Select proper disposal procedures</li> <li>✓ Dispose the wastes accordingly</li> </ul>
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### 5. TRB/LB =Trainee’s Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee’s Record/Log Book</b>	As training progresses, students need to be given “Trainee’s Record Book” or “Log Book”. Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, “TR-Trainer Report” or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-10: Work safely with instruments

Unit No	10
Unit Title	Work safely with instruments
Unit Code	CONS06CR04V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Store instruments safely and securely</b>							
Identify requirements for storage facilities and associated document processes	✓	✓	✓		✓	✓	
Store instruments in accordance with requirements and documented procedures	✓		✓	✓	✓	✓	✓
Secure instruments to prevent unauthorized access		✓	✓	✓			✓
Record instruments' movements and usage in accordance with documented procedures	✓	✓	✓	✓	✓	✓	✓
<b>2. Transport instruments safely and securely</b>							
Select vehicle suitable for the purpose	✓	✓	✓		✓	✓	
Attach regulation signage in accordance with state or territory requirements to indicate that radioactive sources are being carried	✓		✓	✓	✓	✓	✓
Ensure that instruments are properly located and fixed securely in place		✓	✓	✓			✓
Ensure security of instruments when the vehicle is	✓	✓	✓	✓	✓	✓	✓
<b>3. Use instruments safely and maintain security</b>							
Follow safe working practices to minimise own exposure to radiation	✓	✓	✓		✓	✓	
Use radiation dosimeter to monitor own exposure to radiation	✓		✓	✓	✓	✓	✓
Follow safe work practices to minimise exposure of others to radiation		✓	✓	✓			✓
Follow safe work practices to protect the instrument from damage	✓	✓	✓	✓	✓	✓	✓
Maintain instrument security	✓	✓	✓		✓	✓	

<b>4. Maintain records</b>							
Record observations, data and results in accordance with workplace procedures	✓	✓	✓		✓	✓	
Maintain confidentiality of workplace information	✓		✓	✓	✓	✓	✓
<b>5. Perform emergency procedures</b>							
Identify potential emergency situations	✓	✓	✓		✓	✓	
Respond to emergencies in accordance with documented procedures	✓		✓	✓	✓	✓	✓
Report emergency situations to appropriate personnel		✓	✓	✓			✓

**Note:**

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

**1. Written questions**

	<b>Question</b>	<b>Answer</b>
1	Where the most common equipment related hazards does comes from laboratories?	The most common equipment-related hazards in laboratories come from devices powered by electricity devices for work with compressed gases, and devices for high or low pressures and temperatures. Other physical hazards include electromagnetic radiation from lasers and radio-frequency generating devices.
2	What does an equipment register contains?	The equipment register contains specific details about each piece of equipment (such as maintenance and calibration dates, maintenance frequency, who is responsible for the equipment, etc.).
3	What type of details must be recorded for equipment in a register? State and explain 5 types of records.	<p>Identity: The name of the piece of equipment, including its type/model where applicable</p> <p>Label: Make this yourself use a logical label that includes the abbreviated name of the laboratory (to indicate that the equipment is owned by the laboratory) and a unique code for the piece of equipment</p> <p>Serial number: This is a number provided by the manufacturer</p> <p>Manufacturer name</p> <p>Manufacturer's contact person and contact details</p> <p>Date of purchasing</p> <p>Date of putting into service</p> <p>Location: E.g. room number and, if applicable the building number</p> <p>Condition: E.g. "Functioning properly"/ "In need of calibration"/ "In need of maintenance"/ "Defect"</p> <p>Service provider name</p> <p>Service provider's contact person and contact details</p> <p>Frequency of maintenance: How often per year is maintenance and calibration needed?</p> <p>Date of previous maintenance</p> <p>Date of next scheduled maintenance</p> <p>Remarks: Additional information, if needed.</p>

4	What does the term critical means?	Critical means that the absence of a properly functioning piece of equipment makes specific routine laboratory examinations impossible to be performed.
5	What is the purpose of not giving access to an unauthorized persons to the laboratory?	The laboratory houses dangerous reagents (e.g. corrosive liquids, inflammable liquids, pathogens, etc.), sensitive equipment that, if handled incorrectly, may break and cost a lot of money to repair, and privacy-sensitive patient data. Therefore, unauthorized persons should not be able to enter the laboratory building.
6	What are the ways to prevent an access to a restricted area?	Access to the laboratory by unauthorized persons must be prevented by displaying signs that indicate that access is forbidden for unauthorized personnel (passive preventive measure). Locks should be put on entry doors (active preventive measure) and laboratory staff should be constantly aware to check for unauthorized persons. Staff should be encouraged to challenge and question unfamiliar persons to determine if they have appropriate authority to be present in the laboratory, and to call for security to assist them in the event that they find an unauthorized person in the laboratory.
7	What easy solutions that can help to evacuate without looking for keys?	<ul style="list-style-type: none"> <li>• A lock on the entrance door(s) and only a door handle on the inside of the door. This way somebody needs a key to open the door from the outside but just has to turn the handle to open the door from the inside.</li> <li>• A badge reading system on the outside of the entrance door(s). All laboratory staff will have a badge to open the door to enter the building. From the inside it must be possible to open the door just by turning the door handle.</li> <li>• A fingerprint reading system on the outside of the entrance door(s). This way somebody needs to put his/her finger on the fingerprint system to enter the building. From the inside it must be possible to open the door just by turning the door handle.</li> </ul>
8	The first step in making the system inventory register is the design and use of Stock Cards. What are the following details a stock card will leave room to fill out?	<ul style="list-style-type: none"> <li>• Name of the item in stock</li> <li>• Date and amount ordered</li> <li>• Date of receipt of item</li> <li>• Amount received</li> <li>• Lot-number</li> <li>• Expiry date</li> <li>• Date the material was placed in service</li> <li>• Amount of items used</li> <li>• Balance of items in stock (number still in stock)</li> </ul>
9	What are the factors to look while transporting hazardous chemicals?	<ul style="list-style-type: none"> <li>• Moving Hours</li> <li>• Transportation Routes</li> <li>• Transportation Equipment</li> <li>• Transportation Vehicle</li> <li>• Personal Protective Equipment</li> </ul>

		<ul style="list-style-type: none"> <li>Spill Response</li> </ul>
10	Explain 3 factors briefly while transporting hazardous chemicals?	<p><i>Moving Hours:</i> Package and move Hazardous Chemicals only during normal business hours so support staff will be available to help if there is a spill or accident.</p> <p><i>Transportation Routes:</i> Never move open containers of hazardous materials in elevators. Do not leave hazardous materials or other items in the corridors during moving. This is a violation of the fire code.</p> <p><i>Spill Response:</i> Ensure that you have immediate access to adequate and proper materials for cleanup of a spill at any point during the move. The spill guidelines should always be observed.</p>
11	What are markings?	Markings are designed to provide an explanation of the contents of a package by using standard terms and codes.
12	What is the purpose of the labels?	Labels are used to visually indicate the type of hazard and the level of hazard contained in a package. Labels rely principally on symbols to indicate the hazard.
13	What are the benefits of a good equipment management?	<ul style="list-style-type: none"> <li>helps to maintain a high level of laboratory performance;</li> <li>reduces variation in test results, and improves the technologist's confidence in the accuracy of testing results;</li> <li>lowers repair costs, as fewer repairs will be needed for a well-maintained instrument;</li> <li>lengthens instrument life;</li> <li>reduces interruption of services due to breakdowns and failures;</li> <li>increases safety for workers;</li> <li>Produces greater customer satisfaction.</li> </ul>
14	What is Placarding?	Placards are just bigger labels which are placed on the outside of the vehicle. Unlike labels, there is only one placard and no information needs to be written on it (i.e., no TI).
15	What are the three classes of carriers?	<ul style="list-style-type: none"> <li>Common,</li> <li>Contract, and</li> <li>Private.</li> </ul>
16	Explain Common, Contract and private carriers.	<p>Common and contract carriers provide a service to others. They carry other peoples' materials.</p> <p>Common carriers have published rates for hauling material, while contract carriers negotiate a specific contract with the shipper. Common and contract carriers are not licensed by the NRC.</p> <p>Private carriers own the radioactive material which they carry. The transport of material is accomplished in direct support of the radioactive material user's business. These carriers are licensed by the NRC.</p>
17	Give some examples of private carriers who transport their sources	<ul style="list-style-type: none"> <li>Industrial radiographers,</li> <li>Portable gauge users, and</li> </ul>

	from one job site to another.	<ul style="list-style-type: none"> <li>Well loggers.</li> </ul>
18	After equipment has been installed. What are the details that needs to be addressed before putting the equipment into service?	<ul style="list-style-type: none"> <li>Assign responsibility for performing the maintenance and operation programmes.</li> <li>Develop a system for recording the use of parts and supplies.</li> <li>Implement a written plan for calibration, performance verification, and proper operation of the equipment.</li> <li>Establish a scheduled maintenance programme that includes daily, weekly and monthly maintenance tasks.</li> <li>Provide training for all operators; only personnel who have been trained specifically to properly use the equipment should be authorized as operators.</li> </ul>
19	Laboratories need to verify the manufacturer's performance claims, and demonstrate they can get the same results using the kits or equipment in their laboratory, with their personnel. What are the steps to be followed to verify performance?	<ul style="list-style-type: none"> <li>testing samples with known values and comparing the results to the expected or certified value;</li> <li>if equipment is temperature controlled, establishing the stability and uniformity of the temperature.</li> </ul>
20	What is <i>Validation of new equipment and associated techniques</i> ?	If the equipment and associated techniques are new, validation processes will be important. Validation can be carried out by running samples in parallel using both old and new equipment and methods for a period of time to determine that the expected results can be obtained. These validation procedures should be completely recorded.
21	In establishing an inventory control programme there are a number of factors to consider. A system should be designed so that the laboratory can closely monitor the condition of all supplies and reagents, know what quantities are available and be alerted when there is a need to reorder. What the important steps to follow during this implementations?	<ul style="list-style-type: none"> <li>Assign responsibility—without this, nothing may get done.</li> <li>Analyze the needs of the laboratory.</li> <li>Establish the minimum stock needed for an appropriate time period.</li> <li>Develop needed forms and logs.</li> <li>Establish a system for receiving, inspecting and storing supplies.</li> <li>Maintain an inventory system in all storage areas, and for all reagents and supplies used in the laboratory</li> </ul>
22	Developing an appropriate record-	<ul style="list-style-type: none"> <li>standardized forms</li> </ul>

	keeping system is an important step for inventory management. What are good tools for managing the stock?	<ul style="list-style-type: none"> <li>• card systems</li> <li>• log books.</li> </ul>
23	The stock logbook or card system will provide a way to keep track of all supplies and reagents that are on hand at any given time. What are the information that should be recorded in a stock logbook?	<ul style="list-style-type: none"> <li>• name and signature of the person receiving the materials</li> <li>• date of receipt</li> <li>• expiration date</li> <li>• quantity of the material received</li> <li>• minimum stock that should be on hand</li> <li>• current stock balance.</li> </ul>
24	What is confidentiality?	Confidentiality means keeping a client's information between you and the client, and not telling others including co-workers, friends, family, etc.
25	Confidentiality is the protection of personal information. Give few examples of maintaining confidentiality.	<ul style="list-style-type: none"> <li>• individual files are locked and secured</li> <li>• support workers do not tell other people what is in a client's file unless they have permission from the client</li> <li>• information about clients is not told to people who do not need to know</li> <li>• clients' medical details are not discussed without their consent</li> <li>• adult clients have the right to keep any information about themselves confidential, which includes that information being kept from family and friends.</li> </ul>
26	What types of information is considered confidential?	<ul style="list-style-type: none"> <li>• name, date of birth, age, sex and address</li> <li>• current contact details of family, guardian etc</li> <li>• bank details</li> <li>• medical history or records</li> <li>• personal care issues</li> <li>• service records and file progress notes</li> <li>• individual personal plans</li> <li>• assessments or reports</li> <li>• guardianship orders</li> <li>• incoming or outgoing personal correspondence</li> <li>• ethnic or racial origin, political opinions, religious or philosophical beliefs, health or sexual lifestyle should also be considered confidential</li> </ul>
27	Give an explanation of the importance of confidentiality?	One of the most important elements of confidentiality is that it helps to build and develop trust. It potentially allows for the free flow of information between the client and worker and acknowledges that a client's personal life and all the issues and problems that they have belong to them.

29	To optimize emergency preparedness first all the hazards that could take place at the laboratory must be identified. Give examples of hazards.	<ul style="list-style-type: none"> <li>• Fire</li> <li>• Flooding</li> <li>• Earth quakes</li> <li>• Biological or chemical emergencies</li> </ul>
30	Formulate which procedures and arrangements are necessary to increase emergency preparedness for hazards. Give points for actions that can be taken.	<ul style="list-style-type: none"> <li>• First aid kits and people trained to provide first aid</li> <li>• Evacuation plan</li> <li>• Indication of evacuation routes</li> <li>• Installation of firefighting equipment</li> <li>• Plans to maintain the laboratory in operation following an emergency/disaster (such as an earth quake)</li> </ul> <p>Response plans for biological, chemical and radiological incidents taking place within the laboratory, including a clear division of roles and responsibilities for all staff members during such an emergency</p>
31	What are some responsibilities of a Laboratory Manager?	<ol style="list-style-type: none"> <li>1. Make a list of emergencies that could take place in the laboratory. Consider emergencies related to the work of the laboratory but also external emergencies that require preparedness and full capacity of the laboratory.</li> <li>2. Determine per identified emergency what could be done to increase preparedness. Focus on both procedures and equipment that could be needed in such situations. Also think about organizational arrangements that may be needed in specific emergency situations, such as a specific division or roles and responsibilities.</li> <li>3. Make an action plan to write and implement the identified procedures, purchase the identified emergency equipment and implement the identified organizational emergency arrangements. <ul style="list-style-type: none"> <li>• Monitor timely and adequate implementation of the action plan.</li> </ul> </li> </ol>
32	What are protective actions for life safety?	<ul style="list-style-type: none"> <li>• Evacuation</li> <li>• Sheltering</li> <li>• Shelter-In-Place</li> </ul> <ol style="list-style-type: none"> <li>4. Lockdown</li> </ol>
33	Explain the briefly the process of evacuation.	<ul style="list-style-type: none"> <li>• Prompt evacuation of employees requires a warning system that can be heard throughout the building. Test your fire alarm system to determine if it can be heard by all employees. If there is no fire alarm system, use a public address system, air horns or other means to warn everyone to evacuate. Sound the evacuation signal during planned drills so employees are familiar with the sound.</li> </ul>
34	Explain the briefly the process of sheltering.	If a tornado warning is broadcast, a distinct warning signal should be sounded and everyone should move to shelter in the

		strongest part of the building. Shelters may include basements or interior rooms with reinforced masonry construction. Evaluate potential shelters and conduct a drill to see whether shelter space can hold all employees. Since there may be little time to shelter when a tornado is approaching, early warning is important.
35	Explain the briefly the process of lockdown.	An act of violence in the workplace could occur without warning. If loud “pops” are heard and gunfire is suspected, every employee should know to hide and remain silent. They should seek refuge in a room, close and lock the door, and barricade the door if it can be done quickly. They should be trained to hide under a desk, in the corner of a room and away from the door or windows. Multiple people should be trained to broadcast a lockdown warning from a safe location.
36	What are the reasons to report?	<ol style="list-style-type: none"> <li>1. Accident investigation of a minor injury can help to uncover and correct a problem. Left unreported, it could happen again to someone else.</li> <li>2. An injury may not require treatment now, but it could become a problem at a later time.</li> <li>3. The Director of Safety and Security will investigate and determine what can be done to prevent a recurrence.</li> <li>4. Accident reports should be submitted to the Director of Human Resources</li> </ol>

## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	Students need to undertake assignments related to applying knowledge safely store, transport and operate laboratory instruments following established safe work practices and in accordance with laboratory procedures and licensing requirements, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	<p>Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas.</p> <ul style="list-style-type: none"> <li>✓ Store instruments safely and securely</li> <li>✓ Transport instruments safely and securely</li> <li>✓ Use instruments safely and maintain security</li> <li>✓ Maintain records</li> <li>✓ Perform emergency procedures</li> </ul>
3	Review Assessment papers	<p>Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following.</p> <ul style="list-style-type: none"> <li>✓ Store instruments safely and securely</li> <li>✓ Transport instruments safely and securely</li> <li>✓ Use instruments safely and maintain security</li> <li>✓ Maintain records</li> <li>✓ Perform emergency procedures</li> </ul>

4	Demonstrate how a stock card can leave room to fill out	<p>The student is expected to follow the correct step-by step process to demonstrate on leaving room to fill out on a stock card. The elements which should be assessed are:</p> <ol style="list-style-type: none"> <li>1. Name of the item in stock</li> <li>2. Date and amount ordered</li> <li>3. Date of receipt of item</li> <li>4. Amount received</li> <li>5. Lot-number</li> <li>6. Expiry date</li> <li>7. Date the material was placed in service</li> <li>8. Amount of items used</li> <li>9. Balance of items in stock (number still in stock)</li> </ol>
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### 3. OW =Observation at work Place

#	Questions	Answers
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Store instruments safely and securely</li> <li>✓ Transport instruments safely and securely</li> <li>✓ Use instruments safely and maintain security</li> <li>✓ Maintain records</li> <li>✓ Perform emergency procedures</li> </ul>
2	Log Books	<p>Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.</p>
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related safely store, transport and operate laboratory instruments following established safe work practices.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged.</p>
4	Execute a practical drill for evacuation	<p>As the students attend the practical test to Execute a practical drill for evacuation, make sure the student use the proper techniques and tools and the information he shared is accurate in the drill</p>

#### 4. OQ=Oral Questioning

#	Questions	Answers
1	Store instruments safely and securely	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify requirements for storage facilities and associated document processes</li> <li>✓ Store instruments in accordance with requirements and documented procedures</li> <li>✓ Secure instruments to prevent unauthorized access</li> <li>✓ Record instruments' movements and usage in accordance with documented procedures</li> </ul>
2	Transport instruments safely and securely	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Select vehicle suitable for the purpose</li> <li>✓ Attach regulation signage in accordance with state or territory requirements to indicate that radioactive sources are being carried</li> <li>✓ Ensure that instruments are properly located and fixed securely in place</li> <li>✓ Ensure security of instruments when the vehicle is unattended</li> </ul>
3	Use instruments safely and maintain security	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Follow safe working practices to minimise own exposure to radiation</li> <li>✓ Use radiation dosimeter to monitor own exposure to radiation</li> <li>✓ Follow safe work practices to minimise exposure of others to radiation</li> <li>✓ Follow safe work practices to protect the instrument from damage</li> <li>✓ Maintain instrument security</li> </ul>
4	Maintain records	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Record observations, data and results in accordance with workplace procedures</li> <li>✓ Maintain confidentiality of workplace information</li> </ul>
5	Perform emergency procedures	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify potential emergency situations</li> <li>✓ Respond to emergencies in accordance with documented procedures</li> <li>✓ Report emergency situations to appropriate personnel</li> </ul>

## 5. TRB/LB =Trainee’s Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee’s Record/Log Book</b>	As training progresses, students need to be given “Trainee’s Record Book” or “Log Book”. Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, “TR-Trainer Report” or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.  Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.

## Unit-11: Record and present data

Unit No	11
Unit Title	Record and present data
Unit Code	CONS06CR05V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Record and check data</b>							
Enter data into laboratory information system or record sheets as directed	✓	✓	✓		✓	✓	
Check data to identify transcription errors or atypical entries	✓		✓	✓	✓	✓	✓
Rectify errors in data using enterprise procedures		✓	✓	✓		✓	✓
<b>2. Calculate simple scientific quantities</b>							
Calculate simple scientific quantities using given formulae and data	✓	✓	✓		✓	✓	
Ensure calculated quantities are consistent with estimations and expectations	✓		✓	✓	✓	✓	✓
Report all calculated quantities with appropriate precision and units		✓	✓	✓		✓	✓
<b>3. Present data in tables, charts and graphs</b>							
Present data accurately in tables and charts using given formats and scales	✓	✓	✓		✓	✓	
Recognise and report obvious features and trends in data	✓		✓	✓	✓	✓	✓
<b>4. Store and retrieve data</b>							
File and store data in accordance with enterprise procedures	✓	✓	✓		✓	✓	
Maintain enterprise confidentiality standards	✓		✓	✓	✓	✓	✓

#### Note:

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

## 1. Written questions

#	Question	Answer
1	What is term “specimen”?	The term “specimen” is very commonly used in the laboratory to indicate a sample taken from the human body, but the terminology used throughout ISO documents is “primary sample”, or just “sample”.
2	What are the importance of good management?	Proper management of samples is critical to the accuracy and reliability of testing, and therefore to the confidence in laboratory diagnosis. Laboratory results influence therapeutic decisions and can have significant impacts on patient care and outcomes. It is important to provide accurate laboratory results in order to ensure good treatment.
3	Written policies for sample management must be established and reflected in the laboratory handbook. What are the components that should be addressed?	<ul style="list-style-type: none"> <li>• information needed on requisitions or forms;</li> <li>• handling urgent requests;</li> <li>• collection, labelling, preservation and transport;</li> <li>• safety practices (leaking or broken containers, contaminated forms, other biohazards);</li> <li>• evaluating, processing and tracking samples;</li> <li>• storage, retention and disposal.</li> </ul>
4	What are the important information that should be included in the laboratory handbook?	<ul style="list-style-type: none"> <li>• contact names and telephone numbers;</li> <li>• name and address of the laboratory;</li> <li>• hours of operation of the laboratory;</li> <li>• list of tests that can be ordered;</li> <li>• detailed information on sample collection requirements;</li> <li>• sample transport requirements, if any;</li> </ul>
5	What are transposition errors? Give an example as well.	<p><i>Transposition Errors</i> Transposition errors happen when the encoder accidentally mixed up the order of numbers or letters.</p> <p>For example, 78 might be entered as 87, or ‘faith’ might be entered as ‘faiht’.</p>
6	How can verification be done?	Verification can be done to ensure that the data in the database has as few errors as possible. Another way to phrase this is by saying that verification is done to make sure that the data entered is equal to the data from the original source.
7	What is verification?	Verification means to check that the data from the original source document is exactly the same as the data that you have entered into the system.
8	What is double entry?	<i>Double entry</i> – This refers to inputting the data twice and comparing the two entries.
9	What is proofreading data?	<i>Proofreading data</i> – This process requires another person checking the data entry against the original document. This is tedious as well as costly.

10	What the simplest method to do verification?	<b>Printing out a copy of the data and comparing the printout to the original paper document</b> – This is probably the simplest method of verification because you can put both copies side by side and scan both for errors. However, it can be tedious if there is a large amount of data to check. Also, if scanned too quickly, errors could well be overlooked.								
11	<p>The pounds (lb) of calcium hypochlorite used each day for a week are given below. Based on the data, what was the average lb/day hypochlorite chemical use during the week?</p> <table border="1" data-bbox="268 707 612 1025"> <tr> <td data-bbox="268 707 459 786">Monday, 50 lb/day</td> <td data-bbox="459 707 612 786">Friday, 56 lb/day</td> </tr> <tr> <td data-bbox="268 786 459 864">Tuesday, 55 lb/day</td> <td data-bbox="459 786 612 864">Saturday, 51lb/day</td> </tr> <tr> <td data-bbox="268 864 459 943">Wednesday, 51 lb/day</td> <td data-bbox="459 864 612 943">Sunday, 48 lb/day</td> </tr> <tr> <td data-bbox="268 943 459 1025">Thursday, 46 lb/day</td> <td data-bbox="459 943 612 1025"></td> </tr> </table>	Monday, 50 lb/day	Friday, 56 lb/day	Tuesday, 55 lb/day	Saturday, 51lb/day	Wednesday, 51 lb/day	Sunday, 48 lb/day	Thursday, 46 lb/day		$\text{Average use (lb/day)} = \frac{357}{7}$ $= 51 \text{ lb/day}$
Monday, 50 lb/day	Friday, 56 lb/day									
Tuesday, 55 lb/day	Saturday, 51lb/day									
Wednesday, 51 lb/day	Sunday, 48 lb/day									
Thursday, 46 lb/day										
12	The average calcium hypochlorite use at a plant is 40 lb/day. If the chemical inventory in stock is 1100 lb, how many days of supply is this?	$\text{Inventory supply (days)} = \frac{1100 \text{ lb in inventory}}{40 \text{ lb/day average use}}$ $= 27.5 \text{ days}$								
13	Determine the chlorinator setting (lb/day) required to treat a flow of 4 MGD with a chlorine dose of 5 mg/L.	$\text{Chlorine (lb/day)} = 5 \text{ mg/L} \times 4 \text{ MGD} \times 8.34 \text{ lb/gal}$ $= 167 \text{ lb/day}$								
14	A pipeline that is 12 inches in diameter and 1400 ft long is to be treated with a chlorine dose of 48 mg/L. How many lb of chlorine will this require?	$\text{Volume (gal)} = 0.785 \times D^2 \times \text{length (ft)} \times 7.48 \text{ gal/cu ft}$ $= 0.785 \times 1 \text{ ft} \times 1 \text{ ft} \times 1400 \text{ ft} \times 7.48 \text{ gal/cu ft}$ $= 8221 \text{ gal}$ $\text{Chlorine (lb)} = 48 \text{ mg/L} \times 0.008221 \text{ MG} \times 8.34 \text{ lb/gal}$ $= 3.3 \text{ lb}$								
15	A chlorinator setting is 30 lb per 24 hr. If the flow being chlorinated is 1.25 MGD, what is the chlorine dosage (expressed as mg/L)?	$30 \text{ lb/day} = x \text{ mg/L} \times 1.25 \text{ (MGD)} \times 8.34 \text{ lb/gal}$ $x = \frac{30}{1.25 \times 8.34}$ $x = 2.9 \text{ mg/L}$								

16	A flow of 1600 gpm is to be chlorinated. At a chlorinator setting of 48 lb per 24 hr, what would be the chlorine dosage (in mg/L)?	$1600 \text{ gpm} \times 1440 \text{ min/day} = 2,304,000 \text{ gpd}$ $= 2.304 \text{ MGD}$ <p>Now calculate the chlorine dosage in mg/L using Equation 19.1:</p> $\text{Chlorine (lb/day)} = x \text{ mg/L} \times 2.304 \text{ MGD} \times 8.34 \text{ lb/gal} = 48 \text{ lb/day}$ $x = \frac{48}{2.304 \times 8.34}$ $= 2.5 \text{ mg/L}$
17	What are the steps in reading a table?	<p>Read the title.</p> <p>Check the source of the data.</p> <p>Examine the column and row headings, particularly the units used.</p> <p>Check that you understand the meaning of any symbols or abbreviations.</p> <p>Extract the information you need from the main body of the table.</p>
18	What are the steps of reading a chart or graph?	<p>Read the title of the chart and check the source of the data.</p> <p>Check the axes. What is being measured? What units have been used?</p> <p>Examine the scales. How should these be interpreted? What does each interval represent?</p> <p>Check the key or legend. What does the shading or line represent?</p> <p>Finally, examine the chart or graph itself, reading off the information that you need. Are you looking for a specific value or a trend or some other information?</p>
19	What are the steps of drawing a graph and charts?	<p>Include a clear title—so that your reader can see at a glance whether this chart is the one they are interested in.</p> <p>Include the source of the data—so that your reader can make further checks on how the data was collected if they wish.</p> <p>Choose the simplest graph or chart that illustrates the point you wish to emphasize.</p> <p>Label axes with both words and units.</p> <p>Mark scales clearly, choosing a scale that is easy to interpret.</p> <p>Include a legend if you have used more than one type of shading or line.</p>
20	What is an information management system?	<p>Information management is a system that incorporates all the processes needed for effectively managing data—both incoming and outgoing test information. The information management system may be entirely paper-based, computer-based, or a combination of both.</p>
21	When planning and developing an information management system,	<ul style="list-style-type: none"> <li>• unique identifiers for samples</li> <li>• standardized test request forms (requisitions)</li> </ul>

	<p>whether it is a manual, paper-based system, or an electronic system. What are some important elements to consider?</p>	<ul style="list-style-type: none"> <li>• logs and worksheets</li> <li>• checking processes to assure accuracy of data recording and transmission</li> <li>• protection against loss of data</li> <li>• protection of patient confidentiality and privacy</li> <li>• effective reporting systems</li> <li>• effective and timely communication</li> </ul>
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## 2. PT=Practical Test

#	Practical Activity	Additional details related to the activity
1	Student Assignments	<p>Students need to undertake assignments related to record and store data, perform simple calculations of scientific quantities and present information in tables and graphs, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.</p>
2	Review Log Book for practical activities	<p>Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas.</p> <ul style="list-style-type: none"> <li>✓ Record and check data</li> <li>✓ Calculate simple scientific quantities</li> <li>✓ Present data in tables, charts and graphs</li> <li>✓ Store and retrieve data</li> </ul>
3	Review Assessment papers	<p>Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following.</p> <ul style="list-style-type: none"> <li>✓ Record and check data</li> <li>✓ Calculate simple scientific quantities</li> <li>✓ Present data in tables, charts and graphs</li> <li>✓ Store and retrieve data</li> </ul>
4	Demonstrate how to read a table	<p>The student is expected to follow the correct step-by step process to use the information in the table. The elements which should be assessed are:</p> <ol style="list-style-type: none"> <li>1. Read the title.</li> <li>2. Check the source of the data.</li> <li>3. Examine the column and row headings, particularly the units used.</li> <li>4. Check that you understand the meaning of any symbols or abbreviations.</li> <li>5. Extract the information you need from the main body of the table</li> </ol>

### 3. OW =Observation at work Place

#	Activity to observe	Additional details
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Record and check data</li> <li>✓ Calculate simple scientific quantities</li> <li>✓ Present data in tables, charts and graphs</li> <li>✓ Store and retrieve data</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to record and store data, perform simple calculations of scientific quantities and present information in tables and graphs.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged. .</p>
4	Demonstrate how to check data on screen against original paper document	As the students attend the practical test to c identify transcription and transposition errors, make sure the student cross check and confirms the data before the submission.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	Record and check data	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Enter data into laboratory information system or record sheets as directed</li> <li>✓ Check data to identify transcription errors or atypical entries</li> <li>✓ Rectify errors in data using enterprise procedures</li> </ul>
2	Calculate simple scientific quantities	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Calculate simple scientific quantities using given formulae and data</li> <li>✓ Ensure calculated quantities are consistent with estimations and expectations</li> <li>✓ Report all calculated quantities with appropriate precision and units</li> </ul>

3	Present data in tables, charts and graphs	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Present data accurately in tables and charts using given formats and scales</li> <li>✓ Recognise and report obvious features and trends in data</li> </ul>
4	Store and retrieve data	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ File and store data in accordance with enterprise procedures</li> <li>✓ Maintain enterprise confidentiality standards</li> </ul>

### 5. TRB/LB =Trainee’s Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee’s Record/Log Book</b>	As training progresses, students need to be given “Trainee’s Record Book” or “Log Book”. Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, “TR-Trainer Report” or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-12: Perform calibration and maintenance of laboratory equipment

Unit No	12
Unit Title	Perform calibration and maintenance of laboratory equipment
Unit Code	CONS06CR06V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Perform setup and pre-use checks of laboratory equipment</b>							
Perform laboratory equipment setup and pre-use checks in accordance with enterprise procedures	✓	✓	✓	✓	✓	✓	✓
Perform safety checks in accordance with relevant enterprise and instrumental procedures		✓	✓	✓	✓	✓	✓
Identify faulty or unsafe components and equipment and report to appropriate personnel	✓	✓	✓		✓		✓
Complete instrument log books/records to meet enterprise requirements	✓	✓	✓	✓	✓	✓	✓
<b>2. Perform calibration checks</b>							
Startup equipment according to operating procedures	✓	✓	✓	✓	✓	✓	✓
Use specified standards for calibration check		✓	✓	✓	✓	✓	✓
Check equipment as per calibration procedures and schedules	✓	✓	✓		✓		✓
Record all calibration data accurately and legibly	✓	✓	✓	✓	✓	✓	✓
Compare data with specifications and/or previous records to identify non-compliant equipment	✓	✓	✓	✓	✓	✓	✓
Quarantine out of calibration equipment		✓	✓	✓	✓	✓	✓
<b>3. Assist with equipment maintenance</b>							
Ensure all equipment work areas are clean during and after equipment use	✓	✓	✓	✓	✓	✓	✓
Perform basic maintenance in accordance with enterprise procedures		✓	✓	✓	✓	✓	✓
Clean and store equipment according to enterprise and/or manufacturer's specifications/procedures	✓	✓	✓		✓		✓
Identify and replace,repair or dispose of damaged/worn equipment as appropriate	✓	✓	✓	✓	✓	✓	✓

4. Maintain records							
Record and report information on unsafe or faulty equipment according to enterprise procedures	✓	✓	✓		✓		✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

**1. Written questions**

#	Question	Answer
1	What are few criteria to consider when selecting equipment?	<ul style="list-style-type: none"> <li>• The instrument should be matched against the service the laboratory provides.</li> <li>• Should have warranty for equipment</li> <li>• Facility equipment</li> <li>• Understand the performance characteristics of instrument</li> <li>• Cost of the equipment is within the laboratory’s budget</li> </ul>
2	What are the factors to check before purchasing?	<ul style="list-style-type: none"> <li>• wiring diagrams, computer software information, a list of parts needed, and an operator’s manual are provided;</li> <li>• the manufacturer will install the equipment and train staff (covering travel expenses as necessary) as part of the purchase price;</li> <li>• the warranty includes a trial period to verify that the instrument performs as expected;</li> <li>• the manufacturer’s maintenance can be included in the contract and if so,</li> <li>• whether maintenance is provided on a regular basis</li> </ul>
3	What should be considered if an equipment is installed by the laboratory?	<ul style="list-style-type: none"> <li>• check that the package contents contain all of the parts;</li> <li>• make a copy of any software that is part of the system;</li> <li>• do not allow the equipment to be used before it is completely installed, performance is verified, and testing personnel are trained</li> </ul>
4	What important information should be provided while reporting a defective product?	<ul style="list-style-type: none"> <li>• reasons you consider the product to be defective</li> <li>• details of any injuries or harm resulting from the defect</li> <li>• a description of the defect with, where relevant, measurements (such as gaps in safeguards and the distance through such gaps to parts giving rise to danger)</li> <li>• photographs of the product and the defect, if available</li> <li>• details of the markings / information on the product or accompanying documentation (eg type, serial number, date of manufacture, CE or other conformity markings)</li> </ul>

		<ul style="list-style-type: none"> <li>• full contact details of the manufacturer, any supplier(s) and date of supply</li> </ul>
5	After equipment has been installed. What are the following details that needs to be addressed before putting the equipment into service?	<ul style="list-style-type: none"> <li>• assign responsibility for performing the maintenance and operation programs;</li> <li>• develop a system for recording the use of parts and supplies;</li> <li>• implement a written plan for calibration, performance verification, and proper operation of the equipment;</li> <li>• establish a scheduled maintenance program that includes daily, weekly, and monthly maintenance tasks;</li> <li>• provide training for all operators; only personnel who have been trained specifically to properly use the equipment should be authorized as operators.</li> </ul>
6	How to follow the manufacturer's direction carefully when performing the initial calibration of the instrument.	It is a good idea to calibrate the instrument with each test run, when first putting it into service. Determine how often the instrument will need to be recalibrated, based on its stability and on manufacturer's recommendation.
7	How to check equipment as per calibration procedures and schedules?	Prior to testing specimens, it is important to evaluate the performance of new equipment to ensure it is working correctly with respect to accuracy and precision. In addition, test methods using kits or laboratory instruments need to be evaluated for the ability to detect disease (sensitivity, specificity, positive and negative predictive value), and to determine normal and reportable ranges.
8	What are the steps that should be followed to verify performance?	<ul style="list-style-type: none"> <li>• testing samples with known values and comparing the results to the expected or certified value;</li> <li>• if equipment is temperature controlled, establishing the stability and uniformity of the temperature</li> </ul>
9	Explain function checks.	In order to verify that equipment is working according to the manufacturer's specifications, it is necessary to monitor instrument parameters by performing periodic function checks. This should be done before using the instrument initially, then with the frequency recommended by the manufacturer. These function checks should also be done following any instrument repairs. Some examples of function checks are daily monitoring of temperatures and checking the accuracy of wavelength calibration.
10	What does preventive maintenance includes?	Preventive maintenance includes measures such as systematic and routine cleaning, adjustment, and replacement of equipment parts at scheduled intervals.
11	What are the regular intervals that a set of equipment maintenance task should be performed?	daily, weekly, monthly, or yearly
12	How can regular intervals	<ul style="list-style-type: none"> <li>• inaccurate test results due to equipment failure</li> <li>• delays in reporting results</li> </ul>

	maintenance help to prevent?	<ul style="list-style-type: none"> <li>• lower productivity</li> <li>• large repair costs</li> </ul>
13	What is maintenance plan?	A maintenance plan will include preventive maintenance procedures as well as provision for inventory, troubleshooting, and repair of equipment.
14	When implementing an equipment maintenance program what are initial steps that should be followed?	<ul style="list-style-type: none"> <li>• Assign responsibility for providing oversight.</li> <li>• Develop written policies and procedures for maintaining equipment, including routine maintenance plans for each piece of equipment. The plan should specify the frequency with which all maintenance tasks should be performed.</li> <li>• Develop the format for records, create logs and forms, and establish the processes to maintain records.</li> <li>• Train staff on the use and maintenance of the equipment, and assure that all staff understand their specific responsibilities.</li> </ul>
15	To ensure that the laboratory does not run out of spare parts, an inventory record of those used most frequently should be kept for each piece of equipment. What does the record should include?	<ul style="list-style-type: none"> <li>• part name and number;</li> <li>• average use of the part, and the minimum to keep on hand;</li> <li>• cost;</li> <li>• date when the part is placed into storage, and when it is used (in and out stock log);</li> <li>• quantity of each part remaining in inventory</li> </ul>
16	What is troubleshooting?	Manufacturers frequently provide a flowchart that can help determine the source of problems.
17	If problems cannot be identified and corrected in-house, attempt to find a way to continue testing until the equipment can be repaired. What are some ways to achieve this?	<ul style="list-style-type: none"> <li>• Arrange to have access to back-up instruments. It is often too costly for the laboratory to have its own back-up instruments, but sometimes a central stores agency can maintain back-up instruments to be shared throughout the local area or country.</li> <li>• Ask the manufacturer to provide a replacement instrument during repairs.</li> <li>• Send the samples to a nearby laboratory for testing.</li> </ul>
18	How can service and repair may be done?	Manufacturers may provide service and repair of equipment that is purchased from them. Be sure to set up a procedure for scheduling service that must be periodically performed by the manufacturer. When instruments need repair, remember that some warranties require that repairs be handled only by the manufacturer.
19	How can you retire and dispose an equipment?	It is very important to have a policy and procedures for retiring older laboratory equipment. This will usually occur when it is clear that the instrument is not functioning and is not repairable, or when it is outmoded and should be replaced with new equipment.

		<p>Once a piece of equipment is fully retired and it has been determined that it has no further usefulness, it should be disposed of in an appropriate manner. This last step is often neglected in laboratories, and old equipment accumulates, taking up valuable space and sometimes creating a hazard. When disposing of equipment, salvage any useable parts, particularly if the equipment is being replaced with another similar one. Then consider any potential biohazards, and follow all safety disposal procedures.</p>
20	What should an equipment maintenance document include?	<ul style="list-style-type: none"> <li>• step-by-step instructions for routine maintenance, including frequency of performance, and how to keep records of performance;</li> <li>• instructions for carrying out function checks, frequency of performance, and how to record the results;</li> <li>• directions for calibrating the instrument;</li> <li>• guide for troubleshooting;</li> <li>• any required manufacturer's service and repair;</li> <li>• list of any specific items needed for use and maintenance, such as spare parts</li> </ul>
21	What are the characteristics and elements of documenting equipment on logbooks?	<ul style="list-style-type: none"> <li>• step-by-step instructions for routine maintenance, including frequency of performance, and how to keep records of performance;</li> <li>• instructions for carrying out function checks, frequency of performance, and how to record the results;</li> <li>• directions for calibrating the instrument;</li> <li>• guide for troubleshooting;</li> <li>• any required manufacturer's service and repair;</li> <li>• list of any specific items needed for use and maintenance, such as spare parts</li> </ul>
22	On recording problems what should be sure to record?	<ul style="list-style-type: none"> <li>• date problem occurred, and when equipment was removed from service;</li> <li>• reason for breakdown or failure;</li> <li>• corrective action taken; including a note about any service provided by the manufacturer;</li> <li>• date returned to use;</li> <li>• any changes to procedure for maintenance or function checks as a result of the problem.</li> </ul>
23	What are some of the tools that are helpful for keeping records on equipment management?	<ul style="list-style-type: none"> <li>• charts</li> <li>• logs</li> <li>• checklists</li> <li>• graphs</li> <li>• service reports</li> </ul>

## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	Students need to undertake assignments related to perform setup, pre-use and in-house calibration checks on equipment and assist with its maintenance, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas. <ul style="list-style-type: none"> <li>✓ Perform setup and pre-use checks of laboratory equipment</li> <li>✓ Perform calibration checks</li> <li>✓ Assist with equipment maintenance</li> <li>✓ Maintain records</li> </ul>
3	Review Assessment papers	Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following. <ul style="list-style-type: none"> <li>✓ Perform setup and pre-use checks of laboratory equipment</li> <li>✓ Perform calibration checks</li> <li>✓ Assist with equipment maintenance</li> <li>✓ Maintain records</li> </ul>
4	Demonstrate an inventory report keeping procedure.	The student is expected to follow the correct step-by step process to retiring and disposing an equipment. The elements which should be assessed are: <ul style="list-style-type: none"> <li>✓ part name and number;</li> <li>✓ average use of the part, and the minimum to keep on hand;</li> <li>✓ cost;</li> <li>✓ date when the part is placed into storage, and when it is used (in and out stock log);</li> <li>✓ quantity of each part remaining in inventory</li> </ul>

## 3. OW =Observation at work Place

#	Questions	Answers
1	Assessment papers	While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students. <ul style="list-style-type: none"> <li>✓ Perform setup and pre-use checks of laboratory equipment</li> <li>✓ Perform calibration checks</li> <li>✓ Assist with equipment maintenance</li> </ul>

		✓ Maintain records
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	During the implementation of the training program, students would have completed assignments related perform setup, pre-use and in-house calibration checks on equipment and assist on maintenance.  Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged. .
4	Demonstrate how to retire and dispose an equipment	As the students attend the practical test to retire and dispose an equipmet, make sure the student use the proper techniques and the information he shared is accurate.

#### 4. OQ=Oral Questioning

#	Questions	Answers
1	Perform setup and pre-use checks of laboratory equipment	Make sure the students answer questions related to the following areas <ul style="list-style-type: none"> <li>✓ Perform laboratory equipment setup and pre-use checks in accordance with enterprise procedures</li> <li>✓ Perform safety checks in accordance with relevant enterprise and instrumental procedures</li> <li>✓ Identify faulty or unsafe components and equipment and report to appropriate personnel</li> <li>✓ Complete instrument log books/records to meet enterprise requirements</li> </ul>
2	Perform calibration checks	Make sure the students answer questions related to the following areas <ul style="list-style-type: none"> <li>✓ Startup equipment according to operating procedures</li> <li>✓ Use specified standards for calibration check</li> <li>✓ Check equipment as per calibration procedures and schedules</li> <li>✓ Record all calibration data accurately and legibly</li> <li>✓ Compare data with specifications and/or previous records to identify non-compliant equipment</li> <li>✓ Quarantine out of calibration equipment</li> </ul>
3	Assist with equipment maintenance	Make sure the students answer questions related to the following areas <ul style="list-style-type: none"> <li>✓ Ensure all equipment work areas are clean during and after equipment use</li> <li>✓ Perform basic maintenance in accordance with enterprise procedures</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Clean and store equipment according to enterprise and/or manufacturer's specifications/procedures</li> <li>✓ Identify and replace, repair or dispose of damaged/worn equipment as appropriate</li> </ul>
4	Maintain records	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Record and report information on unsafe or faulty equipment according to enterprise procedures</li> </ul>

### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-13: Sampling and prepare samples for testing

Unit No	13
Unit Title	Sampling and prepare samples for testing
Unit Code	CONS06CR07V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW = Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Sampling</b>							
Locate sampling points	✓	✓	✓	✓	✓	✓	✓
Sampling frequency and Sampling methods		✓	✓		✓		✓
Make sampling procedure	✓	✓	✓	✓	✓	✓	✓
<b>2. Log samples</b>							
Record date (and time of arrival, if required) of samples at enterprise	✓	✓	✓	✓	✓	✓	✓
Check and match samples with request forms before they are accepted		✓	✓		✓		✓
Enter samples into the laboratory information management system (LIMS)	✓	✓	✓	✓	✓	✓	✓
Apply required document tracking mechanisms	✓	✓	✓	✓	✓	✓	✓
Process 'urgent' test requests according to enterprise requirements		✓	✓		✓		✓
Ensure security and traceability of all information, laboratory data and records	✓	✓	✓	✓	✓	✓	✓
<b>3. Address customer service issues</b>							
Report to referring client/supervisor when samples and request forms do not comply with workplace requirements	✓	✓	✓	✓	✓	✓	✓
Maintain confidentiality of all client/workplace data and information		✓	✓		✓		✓
Ensure that information provided to customers is accurate, relevant and authorized for release	✓	✓	✓	✓	✓	✓	✓
Deal with customers politely and efficiently and in accordance with workplace procedures	✓	✓	✓	✓	✓	✓	✓
<b>4. Address customer service issues</b>							
Perform physical separation of the samples, as required	✓	✓	✓	✓	✓	✓	✓
Prepare the required number of sub-samples		✓	✓		✓		✓

Perform chemical separation of the samples, as required	✓	✓	✓	✓	✓	✓	✓
Place samples in appropriate transport media, as required	✓	✓	✓	✓	✓	✓	✓
Monitor and control sample conditions before, during and after processing		✓	✓		✓		✓
<b>5. Distribute samples</b>							
Group samples requiring similar testing requirements	✓	✓	✓	✓	✓	✓	✓
Distribute samples to workstations maintaining sample integrity		✓	✓		✓		✓
Distribute request forms for data entry or filing in accordance with workplace procedures	✓	✓	✓	✓	✓	✓	✓
Check that samples and relevant request forms have been received by laboratory personnel	✓	✓	✓	✓	✓	✓	✓
<b>6. Maintain a safe work area and environment</b>							
Apply safe work practices to ensure personal safety and that of other laboratory personnel	✓	✓	✓	✓	✓	✓	✓
Use appropriate personal protective equipment (PPE) to ensure personal safety when sampling, processing, transferring or disposing of samples		✓	✓		✓		✓
Report all accidents and spillages to supervisor	✓	✓	✓	✓	✓	✓	✓
Clean up splashes and spillages immediately using appropriate techniques and precautions	✓	✓	✓	✓	✓	✓	✓
Minimise the generation of wastes and environmental impacts		✓	✓		✓		✓
Ensure the safe disposal of hazardous materials and other laboratory wastes	✓	✓	✓	✓	✓	✓	✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

**1. Written questions**

	<b>Question</b>	<b>Answer</b>
1	What is critical-parameter water testing?	Establish well-equipped central and even regional laboratories for water analysis, at the provincial and district levels it may be necessary to rely on a relatively small number of simple tests.
2	What is one objective of surveillance?	One objective of surveillance is to assess the quality of the water supplied by the supply agency and of that at the point of use, so that samples of both should be taken.
3	Where samples must be taken from?	Samples must be taken from locations that are representative of the water source, treatment plant, storage facilities, distribution network, points at which water is delivered to the consumer, and points of use.
4	In selecting sampling points, each locality should be considered individually; however,	Sampling points should be selected such that the samples taken are representative of the different sources from which water is obtained by the public or enters the system.

	there are general criteria to be applied what are those?	<p>These points should include those that yield samples representative of the conditions at the most unfavorable sources or places in the supply system, particularly points of possible contamination such as unprotected sources, loops, reservoirs, low-pressure zones, ends of the system, etc.</p> <p>Sampling points should be uniformly distributed throughout a piped distribution system, taking population distribution into account; the number of sampling points should be proportional to the number of links or branches.</p> <p>The points chosen should generally yield samples that are representative of the system as a whole and of its main components.</p> <p>Sampling points should be located in such a way that water can be sampled from reserve tanks and reservoirs, etc.</p>
5	What sampling sites in a piped distribution network will be classified?	<ul style="list-style-type: none"> <li>• fixed and agreed with the supply agency;</li> <li>• fixed, but not agreed with the supply agency; or</li> <li>• random or variable.</li> </ul>
6	What are the advantages and disadvantages of type of sampling sites?	<p>Fixed sites agreed with the supplier are essential when legal action is to be used as a means of ensuring improvement; otherwise, the supply agency may object to a sample result on the grounds that water quality may have deteriorated in the household, beyond the area of responsibility of the supplier. Nevertheless, fixed sample points are rare or unknown in some countries.</p> <p>Fixed sites that are not necessarily recognized by the supply agency are used frequently in investigations, including surveillance. They are especially useful when results have to be compared over time, but they limit the possibility of identifying local problems such as cross-connections and contamination from leaking distribution networks.</p>
7	How to do sampling procedure?	<ol style="list-style-type: none"> <li>1. Detach sand strainer or water filter from tap with appropriate tools;</li> <li>2. Check for the correct sample bottle and label;</li> <li>3. Turn on cold water tap at maximum flow and start timing;</li> <li>4. Let water flow for 2 to 5 minutes depending on how often the tap is used (If the internal laboratory system has not been used for a long period of time, flush the system thoroughly before sampling);</li> <li>5. After flushing, open cap of the sample bottle;</li> <li>6. Keep holding the sample bottle cap in one hand while sample is being collected to ensure it does not come into contact with anything to avoid contamination;</li> <li>7. Fill the sample bottle carefully to prevent overflow;</li> <li>8. Carefully put the cap back on the sample bottle;</li> </ol>
8	What notes should be followed during sampling?	<ol style="list-style-type: none"> <li>1. Never rinse the bottle; the sampling bottle shall be so held that the water</li> <li>2. does not come in contact with the hand before entering into the bottle;</li> <li>3. Make sure that all samples are correctly labeled (sampling point, date and flushing time)</li> <li>4. Reinstall tap sand strainer or water filter with tools;</li> </ol>

		5. Store water samples in ice-boxes with freezer packs and deliver to laboratory on the same day.
9	What are the procedures for cleaning polyethylene bottles (250ml) and caps?	<ol style="list-style-type: none"> <li>1. Rinse bottles and caps once with tap water.</li> <li>2. Fill bottles to just overflowing with diluted 'Decon 90 (5%)' and put caps on bottles.</li> <li>3. Shake bottles slightly and let them stand for at least 2 hours.</li> <li>4. Remove caps and empty bottles.</li> <li>5. Rinse bottles and caps in flowing tap water until no foam is observed.</li> <li>6. Rinse bottles and caps once with deionised water.</li> <li>7. Fill up bottles with 1:1 nitric acid (HNO<sub>3</sub>) and put caps on bottles.</li> <li>8. Shake bottles slightly and let them stand for at least 2 hours.</li> <li>9. Remove caps and empty bottles.</li> <li>10. Rinse bottles and caps 3 times with deionised water.</li> <li>11. Dry bottles and caps in oven at 50°C.</li> </ol>
10	It is good practice for a member of the laboratory staff to sign for the receipt of samples. What are the checks that should follow during the same time?	<ul style="list-style-type: none"> <li>• All of the necessary details are recorded on the labels of sample bottles.</li> <li>• The samples are contained in appropriate bottles.</li> <li>• Samples have arrived in time for subsequent analysis to provide a reliable picture of water quality at the time of sampling.</li> <li>• Samples have been treated with any necessary preservatives.</li> <li>• Samples have been stored at appropriate temperatures, maintained throughout transport.</li> </ul>
11	How can you get more accurate analytical results?	The shorter the time that elapses between collection of a sample and its analysis, the more reliable will be the analytical results.
12	What is microbiological activity responsible for?	Microbiological activity may be responsible for changes in the nitrate-nitrite-ammonia balance, for decreases in phenols and in BOD, or for the reduction of sulfate to sulfide.
13	What is LIMS?	A LIMS will make it easier to track data and reduce the amount of time it takes to record it. The software can make the process of storing and analysing complex data samples simple and easy.
14	LIMS allows scientists and technicians to enter detailed essential information relating to the samples. What are potential information to store?	<ul style="list-style-type: none"> <li>• Inspection number</li> <li>• Batch material</li> <li>• Time and date</li> <li>• Where the test was conducted</li> <li>• Additional data</li> </ul>
15	What are the functions of LIMS that can perform?	<ul style="list-style-type: none"> <li>• Sample Management</li> <li>• Workflow management</li> <li>• Reporting, maintenance and inventory management</li> </ul>
16	What is a sample management?	Sample management is one of the key functions of an LIMS. As a lab manager or technician, there will ways to streamline

		processes and reduce error. An LIMS provides detailed and accurate records of each sample and stores it securely, thus reducing the chances that data could get lost or mixed up as it moves between workers and departments.
17	As you record the initial sample, the system will be able to record details. Outline what kind of details that could.	<ul style="list-style-type: none"> <li>• Who recorded the sample</li> <li>• Who or what the sample was taken from</li> <li>• Which researchers are working on the project?</li> <li>• What part of the process it's currently at</li> <li>• Where it needs to go next</li> <li>• How it should be stored</li> <li>• Relevant dates and when it needs to move to the next stage of the process</li> </ul>
18	What is workflow management?	An LIMS can play the pivotal role of streamlining decision making within the lab. In a busy lab with large-scale research and numerous technicians, this can come in incredibly useful.
19	What can LIMS workflow management can consider?	<ul style="list-style-type: none"> <li>• Automatically assign work to team members</li> <li>• Suggest which instruments should be used</li> <li>• Outline current rules system to researchers</li> <li>• Let staff know exactly where samples should go to next.</li> </ul>
20	LIMS can be used to assist with reporting, maintenance and inventories. Outline what kind of things that can be highlighted in that system.	<ul style="list-style-type: none"> <li>• Identify how long your backlog is</li> <li>• Outline how long it generally takes your lab to process a sample</li> <li>• Highlight which instruments are used most in your lab</li> </ul>
21	What are important things to consider when using a paper system for records?	<p>Permanence—paper records must last for as long as needed. This should be ensured by binding pages together, or using a bound book (log register). Pages should be numbered for easy access, and permanent ink used.</p> <p>Accessibility—paper systems should be designed so that information can be easily retrieved whenever needed.</p> <p>Security—documents and records must be kept in a secure place. Security considerations include maintaining patient confidentiality. Care should be taken to keep documents safe from any environmental hazards such as spills. Consider how records can be protected in the event of fires, floods, or other possibilities.</p> <p>Traceability—it should be possible to trace a sample throughout all processes in the laboratory, and later to be able to see who collected the sample, who ran the test, and what the quality control results were for the test run including issuing of the report.</p>
22	Retention times for record should be determined in each laboratory. What the number of factors that is considered?	<ul style="list-style-type: none"> <li>• the length of time the laboratory will need to have access to its records;</li> <li>• government requirements or standards that dictate record retention times;</li> </ul>

		<ul style="list-style-type: none"> <li>• whether the laboratory is engaged in ongoing research requiring many years of data;</li> <li>• the time interval between the laboratory's assessments or audits</li> </ul>
23	How you can optimise your lab's information and data security, ensuring only the right people can access its most important files and information.	<p>Quick Navigation</p> <ul style="list-style-type: none"> <li>• Cybersecurity</li> <li>• Digital Encryption</li> <li>• Appropriate Record Keeping</li> </ul>
24	What is statements of conformity?	When the customer requests a statement of conformity to a specification or standard for the test, the specification or standard and the decision rule are clearly defined in the compliance programs or standard.
25	What is confidentiality?	Confidentiality is the protection of personal information. Confidentiality means keeping a client's information between you and the client, and not telling others including co-workers, friends, family, etc.
26	What is laboratory quality?	Laboratory quality can be defined as accuracy, reliability and timeliness of reported test results. The laboratory results must be as accurate as possible, all aspects of the laboratory operations must be reliable, and reporting must be timely in order to be useful in a public health setting.
27	How to minimize laboratory error?	In order to achieve the highest level of accuracy and reliability, it is essential to perform all processes and procedures in the laboratory in the best possible way.
28	What is distillation?	<b>Distillation</b> is the purification of a liquid by heating it to its boiling point, causing vaporization, and then condensing the vapors into the liquid state and collecting the liquid. Separation of two or more liquids requires that they have different boiling temperatures. All boiling temperatures can be reduced by decreasing the pressure on the liquid.
29	What is extraction?	<b>Extraction</b> is the removal of one substance from a mixture because of its greater solubility in a given solvent.
30	What is filtration?	<b>Filtration</b> is the process of removing or "straining" a solid (the chemical term is precipitate) from a liquid by the use of filter paper or other porous material.
31	What is chromatography?	<b>Chromatography</b> is the process of separating a mixture by the distribution of its components between two phases, one phase being stationary and the other phase moving. Some examples of chromatography are gas chromatography, paper chromatography, and thin-layer chromatography.
32	What are split replicates?	Split replicates are samples obtained by dividing one sample that is designated for a specific laboratory analysis into two or more subsamples (replicates), each of which is submitted to one or more laboratories for identical analysis.
33	What is Lab-replicate split sample?	Lab-replicate split sample. A sample collected in a single bottle that is split into two or more replicates after having been processed and preserved is used to answer the question: "What is the variability associated with laboratory handling and analysis of the sample?" This type of split replicate sample

		typically is prepared from filtered samples; it is not appropriate, generally, for whole-water samples containing noticeable concentrations of suspended material.
34	What is paper chromatography?	<b>Paper chromatography</b> , in analytical chemistry, technique for separating dissolved chemical substances by taking advantage of their different rates of migration across sheets of paper. It is an inexpensive but powerful analytical tool that requires very small quantities of material.
35	Explain briefly the method of paper chromatograph?	The method consists of applying the test solution or sample as a spot near one corner of a sheet of filter paper. The paper is initially impregnated with some suitable solvent to create a stationary liquid phase. An edge of the paper close to the test spot is then immersed in another solvent in which the components of the mixture are soluble in varying degrees. The solvent penetrates the paper by capillary action and, in passing over the sample spot, carries along with it the various components of the sample. The components move with the flowing solvent at velocities that are dependent on their solubilities in the stationary and flowing solvents.
36	What type of complex mixtures are separated using paper chromatography?	Paper chromatography has become standard practice for the separation of complex mixtures of amino acids, peptides, carbohydrates, steroids, purines, and a long list of simple organic compounds.
37	What is group testing? Give an example.	Group testing is any procedure that breaks up the task of identifying certain objects into tests on groups of items, rather than on individual ones. <b>Example: Multiplex assay design for COVID19 testing</b>
38	What is a challenge of group testing and its solution?	In a laboratory setting, one challenge of group testing is the construction of the mixtures can be time-consuming and difficult to do accurately by hand. Origami assays provided a workaround for this construction problem by providing paper templates to guide the technician on how to allocate patient samples across the test wells.
39	Explain test requisition.	The first step in the process of obtaining the sample is the request for testing. The laboratory must make available a test request form that specifies all the information that will be needed for proper handling and reporting.
40	What are essential information for the test request form that will be including?	<ul style="list-style-type: none"> <li>• patient identification;</li> <li>• tests requested;</li> <li>• time and date of the sample collection;</li> <li>• source of the sample, when appropriate;</li> <li>• clinical data, when indicated;</li> <li>• contact information for the health care provider requesting the test</li> </ul>
41	List some safe working practices that will reduce the possibility of laboratory accidents.	<ul style="list-style-type: none"> <li>• Appropriate attire shall be worn in all laboratories. Closed-toed shoes with leather uppers will be worn. Shorts will not be worn, not even if worn under lab coats. Appropriate, personal protection apparel including lab coats, safety glasses/goggles, filter masks and/or gloves will be made available and shall be worn</li> </ul>

		<ul style="list-style-type: none"> <li>• Hands shall be washed after an operation is completed, after removal of gloves and before leaving the laboratory area. Gloves used in the laboratory shall be removed before leaving the laboratory.</li> <li>• Work areas shall be kept clean and free from clutter.</li> <li>• Laboratory doors shall be kept closed. Laboratories are designed to contain a fire thereby giving the occupants of the building time to escape.</li> <li>• Hazardous materials, including flammable liquids, chemicals, biohazardous materials and radioactive materials, must be stored, handled and disposed of properly.</li> </ul> <p>Etc.</p>
42	What are common responsibility of an employee in a laboratory?	<ul style="list-style-type: none"> <li>• Read, understand and obey written and verbal safety instructions.</li> <li>• Operate only that equipment which she/he has been authorized to use and trained to use safely.</li> <li>• Read the Material Safety Data Sheet before using any hazardous material.</li> <li>• Use the safety gear provided for his/her job.</li> <li>• Keep work areas clean and orderly.</li> <li>• Avoid behavior which could lead to injury.</li> <li>• Report unsafe conditions to his/her supervisor.</li> </ul>
43	Engage and motivate your coworkers to buy green products and help reduce waste. How can you make your office go green?	<ul style="list-style-type: none"> <li>• Instead of printing hard copies of your documents, save them to your hard drive or email them to yourself to save paper.</li> <li>• Make your printer environmentally friendly. Change your printer settings to make double-sided pages. Use small point fonts when possible and use the "fast draft" setting when possible to save ink.</li> <li>• Pay your bills via e-billing programs when possible to save paper.</li> <li>• Use paperclips (over staples) when possible.</li> <li>• Reuse envelopes with metal clasps and reuse file folders by sticking a new label over the previous one.</li> </ul>
44	What are following items that are safe to be disposed?	<ol style="list-style-type: none"> <li>1. Schedule 1 poisons (but not cyanides) and other highly toxic chemicals</li> <li>2. Materials heavily contaminated with substances in (i)</li> <li>3. Materials contaminated with mercury</li> <li>4. Carcinogenic solids including asbestos.</li> </ol>
45	How and what kind of glass can be recycled?	For environmental reasons the recycling of glass is encouraged, but only certain items of waste glass produced within laboratories are acceptable for recycling. Each laboratory should have a bin for recyclable glass. Only clean glass bottles such as those in which chemicals are received, and broken or

		waste plate glass are allowed. All broken laboratory glassware, items significantly contaminated by chemicals, sample tubes, droppers and glass wool must be disposed of as controlled waste.
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## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	Students need to undertake assignments related to log samples, check sample documentation, schedule and prepare samples for testing in accordance with enterprise procedures, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas. <ul style="list-style-type: none"> <li>✓ Sampling</li> <li>✓ Log samples</li> <li>✓ Address customer service issues</li> <li>✓ Prepare samples for testing</li> <li>✓ Distribute samples</li> <li>✓ Maintain a safe work area and environment</li> </ul>
3	Review Assessment papers	Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following. <ul style="list-style-type: none"> <li>✓ Sampling</li> <li>✓ Log samples</li> <li>✓ Address customer service issues</li> <li>✓ Prepare samples for testing</li> <li>✓ Distribute samples</li> <li>✓ Maintain a safe work area and environment</li> </ul>
4	Demonstrate how to do sampling procedure?	The student is expected to follow the correct step-by step process of on safe working practices on reducing the possibility of any laboratory accidents. The elements which should be assessed are: <ol style="list-style-type: none"> <li>1. Detach sand strainer or water filter from tap with appropriate tools;</li> <li>2. Check for the correct sample bottle and label;</li> <li>3. Turn on cold water tap at maximum flow and start timing;</li> <li>4. Let water flow for 2 to 5 minutes depending on how often the tap is used (If the internal laboratory system has not been used for a long period of time, flush the system thoroughly before sampling);</li> <li>5. After flushing, open cap of the sample bottle;</li> </ol>

		<p>6. Keep holding the sample bottle cap in one hand while sample is being collected to ensure it does not come into contact with anything to avoid contamination</p> <p>7. Fill the sample bottle carefully to prevent overflow</p> <p>8. Carefully put the cap back on the sample bottle</p>
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### 3. OW = Observation at work Place

#	Questions	Answers
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Sampling</li> <li>✓ Log samples</li> <li>✓ Address customer service issues</li> <li>✓ Prepare samples for testing</li> <li>✓ Distribute samples</li> <li>✓ Maintain a safe work area and environment</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to log samples, check sample documentation, schedule and prepare samples for testing.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged.</p>
4	Demonstrate the procedure for cleaning polyethylene bottles (250ml) and caps	As the students attend the practical test to demonstrate the step by step procedure for cleaning polyethylene bottles, make sure the student use the proper techniques and the information he shared is accurate.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	Sampling	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Locate sampling points</li> <li>✓ Sampling frequency and sampling methods</li> <li>✓ Make sampling procedures</li> </ul>
2	Log samples	Make sure the students answer questions related to the following areas

		<ul style="list-style-type: none"> <li>✓ Record date (and time of arrival, if required) of samples at enterprise</li> <li>✓ Check and match samples with request forms before they are accepted</li> <li>✓ Enter samples into the laboratory information management systems (LIMS)</li> <li>✓ Apply required document tracking mechanism</li> <li>✓ Process “urgent” test request according to enterprise requirements</li> <li>✓ Ensure security and traceability of all information, laboratory data and records</li> </ul>
3	Address customer service issues	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Report to referring the client/supervisor when samples and request forms do not comply with workplace requirements</li> <li>✓ Maintain confidentiality of all client/workplace data and information</li> <li>✓ Ensure that information provided to customers is accurate, relevant and authorized for release</li> <li>✓ Deal with customers politely and efficiently and in accordance with workplace procedures</li> </ul>
4	Prepare samples for testing	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Perform physical separation of the samples, as required</li> <li>✓ Prepare the required number of sub-samples</li> <li>✓ Perform chemical separation of the samples, as required</li> <li>✓ Place samples in appropriate transport media, as required</li> <li>✓ Monitor and control sample conditions before, during and after processing</li> </ul>
5	Distribute samples	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Group samples requiring similar testing requirements</li> <li>✓ Distribute samples to work stations maintaining sample integrity</li> <li>✓ Distribute request forms for data entry or filing in accordance with workplace procedures</li> <li>✓ Check that samples and relevant request forms have been received by laboratory personnel</li> </ul>
6	Maintain a safe work area and environment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Apply safe work practices to ensure personal safety and that of other laboratory personnel</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Use appropriate personal protective equipment (PPE) to ensure personal safety when sampling, processing, transferring or disposing of samples</li> <li>✓ Report all accidents and spillages to supervisor</li> <li>✓ Clean up splashes and spillages immediately using appropriate techniques and precautions</li> <li>✓ Minimise the generation of wastes and environmental impacts</li> <li>✓ Ensure the safe disposal of hazardous materials and other laboratory wastes</li> </ul>
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### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	<p>Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.</p> <p>Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.</p>

## Unit-14: Prepare working solutions

Unit No	14
Unit Title	Prepare working solutions
Unit Code	CONS06CR08V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Make up working solutions</b>							
Identify the relevant standard methods for solution preparation	✓	✓		✓	✓	✓	✓
Assemble specified laboratory equipment	✓	✓		✓		✓	
Select and prepare materials and solvent of specified purity	✓	✓	✓		✓		✓
Measure appropriate quantities of reagents for solution preparation and record data	✓		✓	✓	✓	✓	✓
Prepare labels and log solution details in laboratory register	✓	✓	✓	✓		✓	
Transfer solutions to appropriately labelled containers	✓	✓	✓	✓	✓	✓	✓
<b>2. Check existing stock of solutions</b>							
Monitor shelf life of working solutions and identify those that are unfit for use according to laboratory procedures	✓	✓	✓	✓	✓	✓	✓
Replace out-of-date or reject solutions according to laboratory procedures	✓		✓		✓		✓
<b>3. Maintain a safe work environment</b>							
Use appropriate safety procedures and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel	✓	✓	✓	✓	✓	✓	✓
Store reagents and clean/store glassware and equipment in accordance with workplace procedures	✓		✓		✓		✓
Minimise generation of waste and environmental impacts		✓		✓		✓	
Clean up spills using appropriate techniques	✓	✓	✓	✓	✓	✓	✓
Ensure the safe collection of laboratory and hazardous waste for subsequent disposal	✓		✓		✓		✓

#### Note:

- ✓ "Other Sources" meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

## 1. Written questions

	Question	Answer
1	What are the five steps of the multi-barrier approach to safe drinking water?	<ol style="list-style-type: none"> <li>1. Protect your source water</li> <li>2. Sediment your water</li> <li>3. Filter your water</li> <li>4. Disinfect your water</li> <li>5. Store your water safely</li> </ol>
2	What are the 3 steps of multi-barrier approach?	Sedimentation, filtration and disinfection
3	Explain these terms below. <ol style="list-style-type: none"> <li>1. Sedimentation</li> <li>2. Filtration</li> <li>3. Disinfection</li> </ol>	Sedimenting water removes larger particles and often more than 50% of pathogens Filtering water removes smaller particles and often more than 90% of pathogens Disinfecting water deactivates or kills any remaining pathogens
4	What is portable test kits?	Portable test kits can also be a useful tool to raise awareness about water quality. Community health promoters or field staff can use water quality testing to help bring about positive changes in hygiene and sanitation behaviours.
5	What are the characteristics of portable water quality test kits?	<ul style="list-style-type: none"> <li>• Easy to use with simple instructions</li> <li>• Small and easy to transport</li> <li>• Fast results</li> <li>• Limited need for distilled or deionized water</li> <li>• Robust (e.g., limited effects from UV light, shock, humidity, temperature)</li> <li>• Can test several parameters</li> <li>• Limited consumables or consumables are easy to obtain</li> <li>• Reasonable cost of equipment and consumables</li> </ul>
6	What can be measured through water quality testing?	Physical, chemical, and microbiological parameters
7	What is pipets and volumetric flasks used for?	Pipets and volumetric flasks are used when we need to know a solution's exact concentration; graduated cylinders, beakers, and/or reagent bottles suffice when a concentrations need only be approximate
8	How stock solution is prepared?	A stock solution is prepared by weighing out an appropriate portion of a pure solid or by measuring out an appropriate volume of a pure liquid, placing it in a suitable flask, and diluting to a known volume.
9	How solutions are prepared by dilution?	Solutions are often prepared by diluting a more concentrated stock solution. A known volume of the stock solution is transferred to a new container and brought to a new volume.
10	The laboratory should keep a register (log) of all incoming samples. What does the register should include?	<ul style="list-style-type: none"> <li>• date and time of collection;</li> <li>• date and time the sample was received in laboratory;</li> <li>• sample type;</li> <li>• Sample name and demographics, as required;</li> <li>• laboratory assigned identification (e.g., number 276_01_06_2009);</li> </ul>

		<ul style="list-style-type: none"> <li>tests to be performed</li> </ul>
11	What will be not be accepted for analysis for specimens?	<ul style="list-style-type: none"> <li>There is no unique identification of the patient i.e. they do not meet the minimum data set for identification</li> <li>There is an incorrect sample type or tube</li> <li>Incorrect transportation conditions</li> <li>Sample is received in a hazardous condition e.g. leaking or sharps attached.</li> <li>Sample or request form is un-labelled or incorrectly labeled with less than the minimum data sets for patient identification</li> <li>Mismatch of details between the form and sample(s)</li> <li>The information provided is illegible</li> </ul>
12	How long solutions can cannot be kept for?	Solutions should not be kept for more than one year.
13	Improper storage of laboratory solutions can reduce their shelf life. What are the following principles should be followed when storing laboratory solutions?	<ul style="list-style-type: none"> <li>Solutions should be kept in a cool place, preferably in the dark and certainly out of direct sunlight.</li> <li>Solutions should be returned to storage, with the lid firmly secured, as soon as the required volume of solution has been measured out.</li> <li>Solutions should be regularly checked, and any that have been kept beyond their shelf life; have deteriorated; have questionable labels; are leaking; have corroded caps; have precipitated out or have developed any other problem, need to be properly disposed of</li> <li>Solutions should be kept well sealed to avoid vaporisation and spills.</li> <li>Solutions should be stored away from heat sources such as heaters and hot water pipes, and sources of ignition such as flames.</li> <li>Handling full bottles of solution can be difficult when reaching overhead. Therefore, to reduce the risk that the bottles are dropped, solutions should preferably not be stored on shelves above eye level.</li> <li>Solutions should not be stored in aisles, stairways, hallways, or on floors, desks or bench tops.</li> </ul>
14	When face shield should be worn?	<ul style="list-style-type: none"> <li>Working with volatile hazardous chemical solutions (eg. concentrated acids).</li> <li>Working with dangerous substances that could strike/splash the face/eyes.</li> <li>There is a risk of solution explosion or instability causing a splash to the face/eyes.</li> <li>There is a risk of dangerous objects striking the face/eyes, such as particles, glass or metal shards.</li> </ul>

15	How or when is standard prescription glasses are not sufficient as protective eyewear?	<ul style="list-style-type: none"> <li>You are working with hazardous chemical solutions and there is a risk of splash to the eye.</li> <li>You are working with toxic, corrosive, pathogenic or radioactive substances.</li> <li>You are undertaking activities where there is a risk of objects striking the eye, such as particles,</li> <li>glass or metal shards.</li> </ul>
16	Mention gloves that are available in laboratory.	Latex disposable examination gloves – powder free Nitrile disposable gloves (blue) Rubber gloves Cotton gloves Leather gloves
17	It should be noted in particular that no material on the "Red List" should ever be washed down a drain. What are some compounds that are considered to be labelled as "Red List"?	antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, tellurium, thallium, tin, titanium, uranium, vanadium and zinc.
18	When should you take a decision to discard, treat or re-check the solutions?	Use for signs of turbidity or deposits that may indicate microbial contamination or chemical degradation. Crystals around the neck of a storage bottle may indicate a change in concentration.
19	What happens when a solution is without a lid?	Solutions without a lid could be contaminated by external contaminants, or some of the water in the bottle could evaporate, thereby changing the concentration of the solution.

## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	Students need to undertake assignments related to prepare working solutions and to check that existing stocks of solutions are suitable for use, as they continue with the unit. Referred assignment will be covering practical aspects related to the unit.
2	Review Log Book for practical activities	Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas. <ul style="list-style-type: none"> <li>✓ Making up working solutions</li> <li>✓ Check existing stock of solutions</li> <li>✓ Maintain a safe work environment</li> </ul>
3	Review Assessment papers	Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following. <ul style="list-style-type: none"> <li>✓ Making up working solutions</li> <li>✓ Check existing stock of solutions</li> <li>✓ Maintain a safe work environment</li> </ul>

4	Demonstrate the five steps of the multi-barrier approach to safe drinking water?	<p>The student is expected to follow the correct step-by step process to multi-barrier approach to safe drinking water.</p> <p>The elements which should be assessed are:</p> <ol style="list-style-type: none"> <li>1. Protect your source water</li> <li>2. Sediment your water</li> <li>3. Filter your water</li> <li>4. Disinfect your water</li> <li>5. 5.Store your water safely</li> </ol>
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### 3. OW =Observation at work Place

#	Questions	Answers
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Making up working solutions</li> <li>✓ Check existing stock of solutions</li> <li>✓ Maintain a safe work environment</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to prepare working solutions and to check that existing stocks of solutions are suitable for use.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged.</p>
4	Demonstrate how solutions are prepared by dilution.	As the students attend the practical test to prepare by diluting a more concentrated stock solution., make sure the student uses the proper techniques and the information he shared is accurate.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	Make up working solutions	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify the relevant standard methods for solution preparation</li> <li>✓ Assemble specified laboratory equipment</li> <li>✓ Select and prepare materials and solvent of specified purity</li> <li>✓ Measure appropriate quantities of reagents for solution preparation and record data</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Prepare labels and log solution details in laboratory register</li> <li>✓ Transfer solutions to appropriately labelled containers</li> </ul>
2	Check existing stock of solutions	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Monitor shelf life of working solutions and identify those that are unfit for use according to laboratory procedures</li> <li>✓ Replace out-of-date or reject solutions according to laboratory procedures</li> </ul>
3	Maintain a safe work environment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Use appropriate safety procedures and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel</li> <li>✓ Store reagents and clean/store glassware and equipment in accordance with workplace procedures</li> <li>✓ Minimise generation of waste and environmental impacts</li> <li>✓ Clean up spills using appropriate techniques</li> <li>✓ Ensure the safe collection of laboratory and hazardous waste for subsequent disposal</li> </ul>

### 5. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.

		Nominated assessor needs to communicate the “Assessment Plan” including the “Different sources of evidence” to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.
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## Unit-15: Perform basic tests

Unit No 15  
 Unit Title Perform basic tests  
 Unit Code CONS06CR09V1/21

### Evidence Matrix

Elements of Competence and Performance Criteria	WT = written Test	PT=Practical Test	OW =Observation at work Place	OQ= Oral questioning	TRB/LB= Trainee's Record / Log Book	TR= trainer report	Other Sources *
<b>1. Interpret test requirements</b>							
Review test request to identify samples to be tested, test method and equipment involved	✓	✓	✓	✓	✓	✓	✓
Identify hazards and workplace controls associated with the sample, preparation methods, reagents	✓	✓		✓	✓		✓
<b>2. Prepare sample</b>							
Record sample description,compare with specification, record and report discrepancies	✓	✓	✓	✓	✓	✓	✓
Prepare sample in accordance with appropriate standard methods	✓	✓		✓	✓		✓
<b>3. Check equipment before use</b>							
Set up test equipment in accordance with test method	✓	✓	✓	✓	✓	✓	✓
Perform pre-use and safety checks in accordance with workplace procedures and manufacturer instructions	✓	✓		✓	✓		✓
Identify faulty or unsafe equipment and report to appropriate personnel	✓	✓	✓	✓	✓	✓	✓
Check calibration status of equipment and report any out-of-calibration items to appropriate personnel	✓	✓		✓	✓		✓
<b>4. Perform tests on samples</b>							
Identify, prepare and weigh or measure sample and standards to be tested	✓	✓	✓	✓	✓	✓	✓
Conduct tests in accordance with workplace procedures	✓	✓		✓	✓		✓
Record data in accordance with workplace procedures	✓	✓	✓	✓	✓	✓	✓
Perform calculations on data as required	✓	✓		✓	✓		✓
Identify and report out of specification or atypical results promptly to appropriate personnel	✓	✓	✓	✓	✓	✓	✓
Shut down equipment in accordance with operating procedures	✓	✓		✓	✓		✓

5. Maintain a safe work environment							
Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel	✓	✓	✓	✓	✓	✓	✓
Minimise the generation of wastes and environmental impacts	✓	✓		✓	✓		✓
Ensure safe disposal of laboratory and hazardous wastes	✓	✓	✓	✓	✓	✓	✓
Clean, care for and store equipment and reagents as required	✓	✓		✓	✓		✓

**Note:**

- ✓ “Other Sources” meant that Assessor can choose evidence from other sources such as S=supervisor/team leader report, C = Certificates T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play.

**1. Written questions**

	Question	Answer
1	How does the sampling must be designed?	Sampling must be designed to obtain accurate data for identifying treatment process changes and varying water qualities. The objective is to remove a small portion that is representative of the entire flow and adequately reflects actual conditions in the water.
2	Where could be a suitable sample location?	The test requirements usually determine sample location. Obtain the sample where mixing is best and the water is of uniform quality. The sampling location must be accessible. Avoid slippery surfaces. Do not climb on or under guardrails.
3	What is composite samples?	This type of sample is taken to determine average conditions in a large volume of water whose chemical properties vary significantly over the course of a day. Small aliquots are taken at regular intervals and pooled into one large sample over a 24-h period.
4	What is grab sample?	A grab sample is taken all at once, at a specific time and place. Insert container upside down into the water. Rotate open end toward direction of flow and allow to fill under the surface.
5	What should be done if preservative or dechlorinating agent is added to empty sample bottle?	If preservative or dechlorinating agent has been added to empty sample bottle, adjust sampling technique so that the bottle does not overfill, or the chemical will be washed out.
6	Explain a shortly about sample bottle?	For chemical testing, the sample bottle must be clean. For bacteriological testing, the sample bottle must be clean and sterile. Bottles may be glass or plastic for most analyses; labels must be firmly attached to the sample bottle, not to the lid. Use labels that will not come off when damp. Use a water-insoluble ink pen. The label on a sample bottle should include sample ID number, date and time of collection, type of sample, location, adverse weather conditions, collector’s initials, analysis to be performed, and sample preservation, if any.

7	What can be done while preservation and transport?	Dissolved oxygen, pH, and temperature should be analyzed on site, at the sampling location. Bacteriological tests must be performed within 24 h of sampling. All samples should be analyzed as soon as possible after collection.
8	What does the chain of custody records consist of?	<ul style="list-style-type: none"> <li>• Sample labels — For sample identification</li> <li>• Sample seals — For shipped samples, to ensure no tampering</li> <li>• Field logbook — Includes all information on label, container type, sample size, field analysis, number of samples taken</li> <li>• Chain of custody record — Includes label information and change of possession forms</li> </ul>
9	Process control and regulatory compliance depend upon the proper recording of laboratory analysis data. What does an analysis reports (bench sheets) consist of?	<ul style="list-style-type: none"> <li>• Name, time, and date of analysis</li> <li>• Analyst name</li> <li>• Sample preparation</li> <li>• Analysis method</li> <li>• Test conditions (standards, reagents, instrument settings, temperature, and reaction time)</li> <li>• Results of analysis</li> <li>• Observations — comments</li> </ul>
10	What should be dependable while selecting a sample size?	<ul style="list-style-type: none"> <li>• Your resources for water quality testing and analyzing data</li> <li>• The total number of sampling points involved</li> <li>• The logistics in reaching the sampling points, especially those in rural, remote areas</li> <li>• How much data is needed to make a good decision</li> <li>• Your best judgment</li> </ul>
11	Describe what ways can help you to decide which locations can be used for sample taking.	There are different methods to choose who or where you are going to sample. It is best to use a random sample (without a particular pattern) so that there is no bias in your results, but this might not always be possible.
12	What is a simple random sampling?	In this method, every household who took part in the project has an equal chance of being selected in the sample. You can use different methods to randomly select the households, such as drawing names or numbers from a hat, or using an online random number generator
13	What is systematic random sampling?	In this method, households are selected at particular intervals. The interval can be calculated by dividing the total number of households who took part in the project by the number of households to be selected (sample size).
14	What is cluster random sampling?	In this method, the population is divided into clusters or groups, and some of these are then chosen by simple random sampling. It is a good method to use for large projects. Samples taken from households of the same street or households within the same tribe are an example of cluster sampling.
15	What is convenience sampling?	Convenience sampling does not give you a random sample of the population because households are only selected if they can be accessed easily and conveniently. Many projects often use

		convenience sampling instead of random sampling due to limited time and resources.
16	Explain how to clean and sterilize sample containers.	<p>You can reuse glass or heat resistant plastic sample containers. To prepare the containers, they should be washed with soap and rinsed at least three times (five is better) with distilled water to remove any residue. If distilled water is not available, clean chlorine-free water may be used (e.g., filtered and then boiled).</p> <p>After washing, sample containers for microbiological testing need to be sterilized. Sample containers for physical and chemical tests need to be clean, but not sterilized. However, often the same water sample is used for physical, chemical and microbiological testing, so then the container must be sterilized.</p>
17	How can a container can be sterilized? State 4 methods.	<ol style="list-style-type: none"> <li>1. Conventional oven: Heat at 180°C for 30 minutes</li> <li>2. Boiling: Boil for 10 minutes</li> <li>3. Autoclave: Heat at 121°C for 20 minutes</li> <li>4. Pressure cooker: Heat for at least 30 minutes</li> </ol>
18	While sampling on surface water. Where should you take the samples from?	<p>For rivers or other moving water, you should try to obtain samples from a point where the water is well mixed and representative of the drinking water supply. Do not take samples that are too near the bank, too far from the point of where the drinking water is taken, or a depth above/below the point of where the drinking water is taken. Surface water quality can also change depending on the time of day or season. It is important to sample at the same time of the day and record the weather conditions when you are taking your sample.</p>
19	During dangerous cases of entering a water or taking sample by hand what technique can be used?	<p>In these cases, you may need to tie your container to a piece of wire or rope and throw it into the water. A bridge is an excellent place at which to take a sample, but only if it is close to where people get their drinking water.</p>
20	Explain the procedure of sampling a surface water source.	<ol style="list-style-type: none"> <li>1. Carefully remove the cap from the container and put it facing up in a clean place or ask somebody to hold it. Take care to prevent dust from entering the container or anything else that may contaminate the sample.</li> <li>2. Hold the sample container firmly and dip the open mouth of the container into the water.</li> <li>3. Lower the container about 20 cm below the surface of the water and scoop up the water sample. This scooping action ensures that no external contamination enters the sample container. In areas where the water is moving (e.g., rivers), the sample should be taken against the direction of the flow of water.</li> <li>4. Lift the sample container carefully and place on a clean surface where it cannot be knocked over. If the container is completely full, pour out a little water to leave an air space in the container. This allows space for mixing the water sample before analysis. Put the cap back on the container.</li> </ol>

21	Explain the procedure of sampling an open well or tank.	<ol style="list-style-type: none"> <li>1. Prepare the sample container. Use string, rope or cable to attach a weight (e.g., small rock) to the container.</li> <li>2. Take a 20 m length of string, rolled around a stick, and tie it to the container. Open the container as described above.</li> <li>3. Carefully remove the cap from the container and put it facing up in a clean place or ask somebody to hold it. Take care to prevent dust from entering the container or anything else that may contaminate the sample.</li> <li>4. Lower the weighted sample container into the well or tank, unwinding the string slowly. Do not allow the container to touch the sides of the well or tank because it may pick up dirt and contaminate the sample.</li> <li>5. Immerse the container completely in the water and continue to lower it below the surface of the water (about 20 cm although this can be difficult to judge). Do not allow the container to touch the bottom of the well or disturb any sediment.</li> <li>6. Once the container is full, bring it up by rewinding the string around the stick. Lift the container carefully and place on a clean surface where it cannot be knocked over. If the container is completely full, pour out a little water to leave an air space in the container. This allows space for mixing the water sample before analysis. Put the cap back on the container.</li> </ol>
22	Explain the procedure of sampling a tap?	<ol style="list-style-type: none"> <li>1. Remove any attachments (e.g., nozzles, pipes, screens) from the tap. These attachments are a frequent source of contamination.</li> <li>2. Optional - Use a clean cloth to wipe the tap and to remove any dirt. Sterilize the inside and outside of the tap for 1 minute. Pour alcohol on the outlet and flame it with a lighter or use tweezers to hold an alcohol-soaked cotton swab that is lit on fire. If the tap is made of plastic, then use an alcohol-soaked cotton swab that is NOT lit on fire, or else the plastic will melt! Sterilizing the tap will tell you the actual water quality. Not sterilizing the tap will tell you the water quality that people are drinking.</li> <li>3. Open the tap before sampling. Carefully turn on the tap and allow water to flow at a moderate rate for 2-3 minutes to clear out any deposits in the pipes.</li> <li>4. Carefully remove the cap from the container and put it facing up in a clean place or ask somebody to hold it. Take care to prevent dust from entering the container or anything else that may contaminate the sample. Hold the sample container under the water flow to fill it. Leave an air space in the container. This allows space for mixing the water sample before analysis. Put the cap back on the container.</li> </ol>
23	What is colorimetric method?	Chemical reagents are added to the water sample which react with the particular chemical parameter of interest. The product that is formed absorbs light at a particular wavelength. The

		water sample is then analyzed in a colorimeter or spectrophotometer and compared to known standards.
24	What is electrode method?	Ion-selective electrodes can measure the concentration of certain ions in the water sample. pH is easily measured with an electrode and meter.
25	What is Atomic Absorption Spectrometer (AAS)?	AAS is used to analyze the presence of metals. Samples are heated either in a flame or electrically in a graphite furnace, and the concentration is determined by the metal atom's absorption of light at a particular wavelength.
26	What is Inductively Coupled Plasma (ICP)?	ICP is also used to analyze the presence of metals. Samples are broken down to the atomic level and metals are detected either through atomic emission spectroscopy or mass spectroscopy.
27	State a limitation of test strips?	The main limitation of test strips is that they are less accurate since they require a visual interpretation of the results.
28	It is important to use the required activation method for the test strip you are using. Different products that require different activation methods. Mention different types of activation methods.	<ul style="list-style-type: none"> <li>• Dipping the strip in the sample</li> <li>• Swishing the strip back and forth in the sample</li> <li>• Holding the reagent area in a stream of the sample</li> </ul>
29	Different test strips require different times that you must wait before you compare the strip to the colour chart. What happens when you use a wrong activation method?	Using the wrong activation method or reading your results too early or late for that test strip may lead to incorrect results.
30	Colour discs are available for a range of chemical parameters. Mention those chemical parameters.	Chlorine, fluoride, nitrate, iron and manganese
31	What is a colorimeter and photometer	Colorimeters and photometers are digital instruments that use a light source to measure the chemical concentration in a water sample. Compared to test strips, they offer more accurate and repeatable results since the concentration is given as a digital reading.
32	State an advantage and disadvantage of colorimeter and photometer.	Colorimeters and photometers can read a large variety of chemicals in a water sample, as well as a wider numerical range within each parameter. However, they are more expensive, need a power source and require training to ensure they are being used properly.
33	What is a digital meter?	Some portable test kits include various digital meters to measure parameters like pH and electrical conductivity (EC).
34	State an advantage and disadvantage of digital meters.	They are relatively easy to use and can provide more accurate measurements than other methods, such as test strips. The main disadvantages are the need to calibrate the meters and

		replace batteries as required, and the general fragility of electronic equipment.
35	What is a buffer solution?	The buffer solution is really a “buffer.” It neutralizes any possible acid or alkaline influences present in the water in which it is dissolved, and the pH should reside very stably at its designated value.
36	What are some factors that should be taken into consideration when choosing an appropriate microbiological test method?	<ul style="list-style-type: none"> <li>• Available resources</li> <li>• Required level of accuracy and precision</li> <li>• Technical skills of staff</li> <li>• Geographical location</li> <li>• Objective of the results</li> </ul>
37	What are the three main test methods to determine the presence of indicator bacteria in drinking water?	<ul style="list-style-type: none"> <li>• Presence/absence (P-A)</li> <li>• Most probable number (MPN)</li> <li>• Membrane filtration</li> </ul>
38	What is Presence-Absence?	Presence-absence (P-A) is a qualitative test that depends on a colour change to indicate the presence of contamination. If the test turns out to be positive, meaning that the indicator bacteria is present, the water sample will change to a specific colour. P-A tests will not tell you the quantity of indicator bacteria in the water sample.
39	What is different P-A products that can test for three types of indicator bacteria?	<ol style="list-style-type: none"> <li>1. H<sub>2</sub>S producing bacteria</li> <li>2. Total coliform bacteria</li> <li>3. Total coliform bacteria and <i>E. coli</i></li> </ol>
40	There are also different P-A tests that use total coliform and/or <i>E. coli</i> as the indicators. What is a general process for these tests?	<ol style="list-style-type: none"> <li>1. A powdered reagent is added to the water sample</li> <li>2. The sample is incubated for 24-48 hours at 35oC</li> <li>3. The results are read: Colourless = negative, Colour = total coliforms present, Fluorescent = <i>E. coli</i> present (seen using a UV lamp)</li> </ol>
41	What is a filter paper?	Filter paper, also called a membrane filter, is used to trap the bacteria from the water sample. A pore size of 0.45 µm is most commonly used since it filters out all coliform bacteria. The filter paper usually has a grid printed on it so that you can more easily count the bacteria colonies. There are various types of filter papers with different grid colours available from manufacturers.
42	What is a culture media?	Culture media are substances which contain nutrients to help the bacteria grow. Culture media in liquid form is called a broth and the semi-solid form (gel) is called an agar. Different culture media are used to grow different indicator bacteria.
43	Describe what is an incubator	The incubator is another important piece of equipment needed for membrane filtration, and sometimes for P-A and MPN tests. There are different types of incubators made by different manufacturers. Some incubators are portable and use a battery

		for power supply, while others need to stay in one location and use the main power supply.
44	What is the purpose of incubation temperature with an example?	The incubation temperature is critical to ensure that microbiological test results are accurate. Different culture media require different temperatures to grow the specific indicator bacteria. For example, thermotolerant coliforms grow at 44oC.

## 2. PT=Practical Test

#	Questions	Answers
1	Student Assignments	<p>Students need to undertake assignments related to prepare samples and perform tests and measurements using standard methods with access to readily available advice from supervisors, as they continue with the unit.</p> <p>Referred assignment will be covering practical aspects related to the unit.</p>
2	Review Log Book for practical activities	<p>Review log books and examine participation of the students in relevant workplace activities and in particular of the following areas.</p> <ul style="list-style-type: none"> <li>✓ Interpret test requirements</li> <li>✓ Prepare sample</li> <li>✓ Check equipment before use</li> <li>✓ Perform tests on samples</li> <li>✓ Maintain a safe work environment</li> </ul>
3	Review Assessment papers	<p>Review unit and final assessment papers completed by the students and crosscheck their practical skills related to the following.</p> <ul style="list-style-type: none"> <li>✓ Interpret test requirements</li> <li>✓ Prepare sample</li> <li>✓ Check equipment before use</li> <li>✓ Perform tests on samples</li> <li>✓ Maintain a safe work environment</li> </ul>
4	Demonstrate the procedure of sampling a surface water source.	<p>The student is expected to follow the correct step-by step process to take sampling from a surface water source. The elements which should be assessed are:</p> <ol style="list-style-type: none"> <li>1. Carefully remove the cap from the container and put it facing up in a clean place or ask somebody to hold it. Take care to prevent dust from entering the container or anything else that may contaminate the sample.</li> <li>2. Hold the sample container firmly and dip the open mouth of the container into the water.</li> <li>3. Lower the container about 20 cm below the surface of the water and scoop up the water sample. This scooping action ensures that no external contamination enters the sample container. In areas where the water is moving (e.g., rivers),</li> </ol>

		<p>the sample should be taken against the direction of the flow of water.</p> <p>4. Lift the sample container carefully and place on a clean surface where it cannot be knocked over. If the container is completely full, pour out a little water to leave an air space in the container. This allows space for mixing the water sample before analysis. Put the cap back on the container.</p>
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### 3. OW =Observation at work Place

#	Questions	Answers
1	Assessment papers	<p>While reviewing the papers, make an assessment of the student knowledge and skills related to the various elements stipulated within the competency unit. Please make sure the observations and findings are compared to the theoretical knowledge and practical skills included within the following areas prior to making a judgment on the performance of the students.</p> <ul style="list-style-type: none"> <li>✓ Interpret test requirements</li> <li>✓ Prepare sample</li> <li>✓ Check equipment before use</li> <li>✓ Perform tests on samples</li> <li>✓ Maintain a safe work environment</li> </ul>
2	Log Books	Likewise, make sure log books are reviewed to assess and evaluate extent of student participation on practical activities related to the above areas or elements covered within the competency unit.
3	Student Assignments	<p>During the implementation of the training program, students would have completed assignments related to prepare samples and perform tests and measurements using standard methods with access to readily available advice from supervisors.</p> <p>Review the assignment reports carefully to ensure students' performance related to the elements of competencies are evaluated and judged.</p>
4	Demonstrate how to clean and sterilize sample containers.	As the students attend the practical test to demonstrate cleaning and sterilization of sample containers, make sure the student uses the proper techniques and the information he shared is accurate.

### 4. OQ=Oral Questioning

#	Questions	Answers
1	Interpret test requirements	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Review test request to identify samples to be tested, test method and equipment involved</li> </ul>

		<ul style="list-style-type: none"> <li>✓ Identify hazards and workplace controls associated with the sample, preparation methods, reagents and/or equipment</li> </ul>
2	Prepare sample	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Record sample description, compare with specification, record and report discrepancies</li> <li>✓ Prepare sample in accordance with appropriate standard methods</li> </ul>
3	Check equipment before use	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Set up test equipment in accordance with test method</li> <li>✓ Perform pre-use and safety checks in accordance with workplace procedures and manufacturer instructions</li> <li>✓ Identify faulty or unsafe equipment and report to appropriate personnel</li> <li>✓ Check calibration status of equipment and report any out-of-calibration items to appropriate personnel</li> </ul>
4	Perform tests on samples	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Identify, prepare and weigh or measure sample and standards to be tested</li> <li>✓ Conduct tests in accordance with workplace procedures</li> <li>✓ Record data in accordance with workplace procedures</li> <li>✓ Perform calculations on data as required</li> <li>✓ Identify and report out of specification or atypical results promptly to appropriate personnel</li> <li>✓ Shut down equipment in accordance with operating procedures</li> </ul>
5	Maintain a safe work environment	<p>Make sure the students answer questions related to the following areas</p> <ul style="list-style-type: none"> <li>✓ Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel</li> <li>✓ Minimise the generation of wastes and environmental impacts</li> <li>✓ Ensure safe disposal of laboratory and hazardous wastes</li> <li>✓ Clean, care for and store equipment and reagents as required</li> </ul>

## 6. TRB/LB =Trainee's Record/Log Book

#	Name of the Source	Information to be checked
1	<b>TRB/LB =Trainee's Record/Log Book</b>	As training progresses, students need to be given "Trainee's Record Book" or "Log Book". Referred book will be used to entry the daily classes and workplace activities and can play an important source of evidence for assessment.
2	<b>TR=Trainer Report</b>	It is expected that every training program will encourage establishment and proper management of all the training records. In this regard, "TR-Trainer Report" or daily training records will illustrate the various training activities being performed and hence can be another important source of information for the assessment.
3	<b>Other Sources</b>	Competency Based Assessment (CBA) adopted for the assessment of this competency unit calls for gathering of evidences and can be from different sources such as S=supervisor/team leader report, C = Certificates, T=Testimonies, VD= Video, P= Photographs, PP= Product produced, S= Simulations, CS= Case Studies,FB= Feedback from Fellow Members and RP= Role Play, etc.  Nominated assessor needs to communicate the "Assessment Plan" including the "Different sources of evidence" to the training institution with the commencement of the program to ensure evidence gathering is undertaken on timely manner with presentation of all the required evidence prior to undertaking Final Assessment.



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