



**REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**ANALYTICAL CHEMISTRY TECHNICIAN**

**KNQF LEVEL 6**

**OCCUPATION STANDARD ISCED CODE: 0531 554A**

## PERFORM BIOCHEMICAL ANALYSIS

ISCED UNIT CODE: 0531 551 14A

TVET CDACC UNIT CODE: ASC/OS/ACHEM/CR/04/6/MA

### UNIT DESCRIPTION

This unit covers the competencies required in performing biochemical analysis. It involves performing biochemical tests, separating biomolecules, preparing buffer solutions and performing biochemical analysis of biomolecules.

### ELEMENT AND PERFORMANCE CRITERIA

<b>ELEMENT</b>  These describe the key outcomes which make up laboratory function	<b>PERFORMANCE CRITERIA</b>  These are assessable statements which specify the required level of performance for each of the elements.  <i><b>Bold and italicized terms are elaborated in the Range</b></i>
1. Perform biochemical tests	1.1 <i><b>Biomolecule samples</b></i> are collected as per biochemistry laboratory manual.  1.2 <i><b>Reagents</b></i> are prepared as per biochemistry on laboratory manual.  1.3 Biomolecule samples are prepared as per biochemistry laboratory manual.  1.4 <i><b>Presence-absence tests</b></i> are performed as per the laboratory manual.
2. Separate biomolecules	2.1 Biomolecule samples are collected as per biochemistry laboratory manual.  2.2 Reagents are prepared as per biochemistry laboratory manual.  2.3 Biomolecules are isolated as per biochemistry laboratory manual.

	<p>2.4 Biomolecules are purified as per biochemistry laboratory manual.</p>
<p>3. Prepare buffer solutions</p>	<p>3.1 Buffer components are selected as per biochemistry laboratory manual.</p> <p>3.2 Buffer components required are calculated as per biochemistry laboratory manual.</p> <p>3.3 Buffer stock solutions are prepared per biochemistry laboratory manual.</p> <p>3.4 Buffer solution pH is adjusted as per biochemistry laboratory manual.</p> <p>3.5 Buffer solution is labelled as per biochemistry laboratory manual.</p> <p>3.6 Buffer solutions are stored as per biochemistry laboratory manual.</p>
<p>4. Perform biochemical analysis of biomolecules</p>	<p>4.1 Biomolecule samples are collected as per biochemistry laboratory manual.</p> <p>4.2 Reagents are prepared as per biochemistry laboratory manual.</p> <p>4.3 Biomolecule samples are prepared as per biochemistry laboratory manual.</p> <p>4.4 Instrument is calibrated as per manufacturers manual.</p> <p>4.5 Analysis is carried out as per biochemistry laboratory manual.</p> <p>4.6 Results are documented as per organizational manual.</p>

## **RANGE**

This section provides a work environment and conditions to which the performance criteria apply. It allows for a different work environment and situations that will affect performance.

<b>Variable</b>	<b>Range</b>
1. Biomolecule samples	<ul style="list-style-type: none"><li>• Lipids</li><li>• Proteins</li><li>• Carbohydrates</li><li>• Enzymes</li><li>• Vitamins</li></ul>
2. Reagents	<ul style="list-style-type: none"><li>• Buffer solutions</li><li>• Solvents</li></ul>
3. Presence-absence tests	<ul style="list-style-type: none"><li>• Benedicts solution test</li><li>• Burette test</li><li>• Millon test</li><li>• Ninhydrin test</li></ul>

## **REQUIRED SKILLS AND KNOWLEDGE**

This section describes the skills and knowledge required for this unit of competency.

### **Required Skills**

The individual needs to demonstrate the following skills:

- Communication skills
- Taking measurements
- Computer skills

- Observation skills
- Sample handling skills

### **Required Knowledge**

The individual needs to demonstrate knowledge of:

- Biochemistry
- Biology
- Sample storage
- Sample preservation
- Laboratory safety

### **EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of Competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Prepared reagents as per biochemistry laboratory manual.</p> <p>1.2 Prepared biomolecule samples as per biochemistry laboratory manual.</p> <p>1.3 Performed qualitative tests as per biochemistry laboratory manual.</p> <p>1.4 Prepared buffer solutions as per biochemistry laboratory manual.</p>
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	<p>1.5 Isolated biomolecules as per biochemistry laboratory manual.</p> <p>1.6 Calibrated Instruments as per manufacturers instruction</p> <p>1.7 Carried out analysis as per biochemistry laboratory manual.</p> <p>1.8 Documented results as per organizational manual.</p>
2. Resource Implications	<p>The following resources should be provided:</p> <p>2.1 Access to relevant workplace</p> <p>2.2 Appropriately simulated environment where assessment can take place</p> <p>2.3 Materials relevant to the proposed activity or tasks</p>
3. Methods of Assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Written tests</p> <p>3.2 Oral questioning</p> <p>3.3 Practical and project</p> <p>3.4 Third party report</p>
4. Context of Assessment	<p>Competency may be assessed:</p> <p>4.1 Workplace</p> <p>4.2 Simulated laboratory environment</p>
5. Guidance information for assessment	<p>5.1 Holistic assessment with other units relevant to the industry sector, laboratory and job role is recommended.</p>