

073206T4CHE

CHEMICAL ENGINEERING TECHNOLOGY LEVEL 6

ENG/OS/CE/CR/04/6

Prepare Process Raw Materials

July/August 2025



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

PRACTICAL ASSESSMENT

INSTRUCTIONS TO ASSESSOR

1. Assess the candidate as the practical progresses observing the critical areas
2. You are required to mark the practical as the candidate perform the tasks
3. You are required to take video clips at critical points
4. Ensure the candidate has a name tag and registration code at the back and front

OBSERVATION CHECKLIST

Candidate's Name & Registration Code			
Assessors Name & Registration Code			
Venue of Assessment			
Date of Assessment			
Items to be Evaluated: <i>Please award marks as appropriate. Give a brief comment on your observation.</i>	Marks Available	Marks Obtained	Comments
1. Wore Personal Protective Equipment • Dustcoat • Leather gloves • Dust mask • Safety goggle • Safety shoes <i>(Award 1 Mark each or zero)</i>	1 1 1 1 1		
Sub- Total 1	5		
TASK 1: Prepare Sample			
2. Weighed 50g of cotton seeds <i>(Award 1 Mark each or zero)</i>	1		
3. Ground the cotton seeds to a fine powder using a mortar and pestle or a mechanical grinder <i>(Award 2 Marks each or zero)</i>	2		
4. Gave a reason why the cotton seeds are grinded (To increase surface area for extraction) <i>(Award 2 Marks each or zero)</i>	2		
Sub-total 2	5		
Task 2: Extract cottonseed oil from cotton seeds using Soxhlet apparatus and hexane			

5. Placed the ground cotton seed material into the thimble <i>(Award 1 Mark each or zero)</i>	2		
6. Added 100 ml of hexane solvent to the round-bottom flask <i>(Award 1 Mark or zero for measuring correct amount and 1 Mark for placing in the round bottom flask)</i>	2		
7. Heated the solvent in the round-bottom flask <i>(Award 2 Marks each or zero)</i>	1		
8. Noted and started the timer when the solvent begins to boil <i>(Award 2 Marks each or zero)</i>	2		
9. Allowed the extraction cycle to continue until solvent runs clear when it returns to the flask <i>(Award 2 Marks each or zero)</i>	2		
10. Turned off the heat after the extraction complete (1 hour), and allowed the Sox apparatus to cool <i>(Award 1 Mark or zero for turning off and 1 Mark for cooling)</i>	2		
11. Carefully removed the round-bottom flask containing the solvent-oil mixture from the apparatus <i>(Award 2 Marks each or zero)</i>	2		
12. Evaporated the solvent from the extracted oil by gently heating the round-bottom flask for 20 minutes <i>(Award 2 Marks each or zero)</i>	2		
13. Allowed the oil to cool to room temperature <i>(Award 2 Marks each or zero)</i>	2		

14. Weight an empty beaker and record the weight as W_0 (Award 2 Marks each or zero)	2		
15. Transferred the purified oil to the empty beaker and recorded its weight (W_1) (Award 1 Mark for transferring the oil and 1 Mark for recording)	2		
16. Determined the weight of the purified oil (W_2) (Award 1 Mark for using correct formula, 1 Mark for substitution and 1 Mark)	3		
17. Calculated the percentage yield of the extracted oil (Award 1 Mark for using correct formula, 1 mark for substitution and 1 Mark)	3		
Sub-Total 3	27		
TASK 3: Maintain housekeeping as per			
• Disposed or kept the liquids and cotton cake from the experiment in the required place • Washed and rinsed the equipment used in the experiment • Cleaned the working surface (Award 1 Mark each or zero)	1 1 1		
Sub-Total 4	3		
GRAND TOTAL	40		
ASSESSMENT OUTCOME			

The candidate was found to be:	
Competent ☐	Not yet Competent ☐
<i>(Please tick as appropriate)</i>	
<i>(The candidate is competent if the candidate obtains at least 50%)</i>	
Feedback from the Candidate:	
Feedback to the Candidate:	
Candidate Signature	Date:
Assessor's Signature	Date