

073206T4CHE

CHEMICAL ENGINEERING TECHNOLOGY LEVEL 6

ENG/OS/CE/CR/05/6

Operate Process Equipment

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
Task 1: Determine the efficiency of the separation process of Acetic Acid from water using Ethyl Acetate			
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		
2. Measured 50 mL of 10% acetic acid solution and poured into a separating funnel <i>(Award 1 Mark for measuring correct amount and 1 Mark for pouring into the funnel or zero)</i>	2		
3. Added 50 mL of ethyl acetate to the separating funnel. <i>(Award 1 Mark or Zero)</i>	1		
4. Shaked gently and vented regularly to release pressure <i>(Award 1 Mark or zero for shaking and 1 Mark for venting to release pressure)</i>	2		

5. Allowed the layers to separate completely <i>(Award 1 Mark or Zero)</i>	1		
6. Carefully collected both aqueous and organic phases in separate containers and 7. <i>(Award 1 Mark or zero for organic phase and 1 Mark for aqueous phase)</i>	2		
8. Measured and recorded the volumes collected for each layer. <i>(Award 1 mark or zero each for measuring and 1 mark each for recording. Total = 4 Marks)</i>	4		
9. Pipetted 10mL from each phase into separate conical flasks <i>(Award 1 Mark for organic phase and 1 Mark for aqueous phase or zero)</i>	2		
8. Titrated each sample with standard NaO using phenolphthalein as the indicator. <i>(Award 1 Mark or zero for organic phase and 1 Mark for aqueous phase)</i>	2		
9. Recorded the volume of NaOH used to determine the acetic acid concentration in each phase in table 1 below <i>(Award 1 Mark or zero for each value recorded, max 6 Marks)</i>	6		
10. Determined the concentration of acetic acid in; • aqueous Phase • Organic Phase <i>(Award 1 Mark each for correct formula and 1 Mark for correct concentration or zero)</i>	4		

11. Calculate the distribution coefficient (KD) - Used correct formula - Substituted the values - Correct answer <i>(Award 1 Mark for each step or zero)</i>	3		
12. Determined the separation efficiency - Used correct formula - Substituted the values - Correct answer <i>(Award 1 Mark for each step or zero)</i>	3		
Sub-Total 2	32		
Task 2: Maintain housekeeping according to SOP			
- Disposed the liquids from the experiment in the given container - Washed and rinsed the equipments in the experiment - Cleaned the working surfaces <i>(Award 1 Mark for each step or zero)</i>	1 1 1		
Sub- Total 3	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 _____