

073206T4CHE

CHEMICAL ENGINEERING LEVEL 6

ENG/OS/CE/CR/05/6/A

Operate Process Equipment

Nov/Dec 2024



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

PRACTICE ASSESSMENT

OBSERVATION CHECKLIST

Candidate's name & Registration No.			
Assessor's name & Reg. code			
Unit(s) of Competency	Operate Process Equipment		
Venue of Assessment			
Date of assessment			
<i>(Award marks appropriately as guided for in the items for evaluation indicated. Give a brief comment where necessary)</i>			
Items to be evaluated:	Marks allocated	Marks obtained	Comments
OBSERVATION CHECKLIST			
Wore Personal Protective Equipment			
• Dustcoat/Overall	1		
• Safety shoes	1		
• Gloves	1		

- Gently inserted the thermometer and copper tubing into the rubber stopper. - Start water flow through the cooling jacket of the condenser. - Ensured that the flow of water is from bottom to top of the condenser. (Award 1 mark for each step done correctly)	1		
c) Set the gas stove setting to medium-high to allow the solution to boil	1		
d) Placed the collection bottle under the pipe to start collecting distillate.	1		
e) After the first bottle had collected 40 ml of distillate, quickly replaced it with an empty one.	1		
f) Covered and labelled the bottle containing the first distillate sample as 1 st sample.	1		
g) Recorded the temperature of the vapor phase above the boiling solution.	5		
(Award 1 mark for each temperature recorded in the table)			
h) Determined the mass of the first sample after cooling in to about 40 degrees C	1		
i) Calculated the specific gravity of the first distillate.	1		
j) Used the specific gravity value obtained to read the alcohol % concentration from the data table provided and recorded the values in the table	5		
(Award 1 mark for the alcohol % of each sample recorded, Value of alcohol% should correspond to the specific gravity calculated and Temp on the table)			
k) Repeat the procedure by collecting the second and third distillate sample.	2		
(Award 1 mark for each procedure repeated)			
l) Turned off the gas stove towards the end of the last distillation and carefully removed the flask from the top of the gas stove.	1		
m) Left the distillate collection bottle for about 5 minutes until the mixture in the flask had stopped boiling.	1		
n) Removed the flask from the clamp, and detached the stopper/tubing from the apparatus	1		

o) Covered the distillation flask while it was cooling.	1		
p) Determined the mass of the solution that remained in the flask after the solution had cooled to below 40°C	1		
q) Calculated the specific gravity of the solution remaining in the flask using the same method you used for the initial solution. (marks awarded above)			
r) For each of the samples, used the <i>specific gravity, temperature and Table of the Densities of ethyl alcohol (C₂H₅OH in water)</i> to determine the mass percentage of ethanol in each sample. (Award 1 mark each for each sample value calculated)	5		
Sub Total	50		
s) Maintained housekeeping according to SOP. - Rinsed all the flasks with clean running water - Wiped work surface - Arranged equipment and apparatus - Discarded the waste (Award 1 mark for each step)	4		
Gra	57		

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

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