

Knowledge Assessment

Qualification	National Vocational Certificate level 2 to 5, in Agriculture Sector (Soil, Water and Fertilizer Testing Lab Technician)
Competency Standard	Perform pH Test of Soil by pH Meter
Purpose of Assessment	
Candidate Details	Name: _____ Registration/Roll Number: _____ Candidate Signature: _____
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: _____ Assessor's code: _____ Signature of the Assessor: _____

Candidate's response is not required to be identical, but similar concepts and/or keywords must be used. Oral questioning may be used to clarify candidate understanding of topic and its application.

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)		Satisfactory	Not Satisfactory
1.	What is a Soil Test?		
2.	Define pH?		
3.	How can I test my pH meter?		
4.	In which of the following ways can zero drift be reduced in pH meters?		

	<ul style="list-style-type: none"> • Using filter • Giving zero adjustment arrangement • Keeping the input impedance high • Using balanced and differential amplifiers 		
5.	<p>If it takes one drop of a certain acid to change the pH of 1 liter of an unbuffered solution from pH 8 to pH 7, how much of this same acid would be required to change the unbuffered solution from pH 5 to pH 4?</p>		
	<ul style="list-style-type: none"> • One drop, because this is apparently what it takes to lower the pH by 1 unit • Only one tenth of a drop • 10 drops • 100 drops • 1000 drops 		
6.	<p>When soil pH is measured by inserting H⁺ ion sensitive electrode into slurry of soil suspended in pure water, the pH reading is a measure of which pool of soil acidity?</p>		
	<ul style="list-style-type: none"> • Exchangeable acidity • Residual acidity • Potential acidity • Active acidity • Total acidity 		
7.	<p>Which of the following is not a failure in pH meters?</p>		
	<ul style="list-style-type: none"> • Defective electrodes • Defective input circuitry • Defective electronic circuitry • Defective calibration 		

Feedback to the Candidate
Candidate's Signature _____ Assessor's Signature _____

Key

National Vocational Certificate level 2 to 5, in **Agriculture Sector (Soil, Water and Fertilizer Testing Lab Technician)**

Perform pH Test of Soil by pH Meter

Questions (Candidate confidently answered questions correctly and demonstrated understanding of the topics and their application)		Satisfactory	Not Satisfactory
8.	<p>What is a Soil Test?</p> <p>A soil test is a process by which nutrients are chemically removed from the soil and measured for their plant available content within the sample. The quantity of available nutrients in the sample determines the amount of fertilizers needed for a particular crop. A soil test also measures pH and the amount of acidity within the soil to determine if lime is needed and how much should be applied.</p>		
9.	<p>Define pH?</p> <p>pH is a measure of how acidic/basic water is. The range goes from 0 to 14, with 7 being neutral. pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. pH is really a measure of the relative amount of free hydrogen and hydroxyl ions in the water.</p>		
10.	<p>How can I test my pH meter?</p> <p>Use distilled water to store the pH probe before it is used for testing. Rinse the probe and set the pH mode, and place it in a neutral buffer solution (with pH 7) for calibration. Similarly, place it in a buffer solution with pH 4. This allows the meter to calibrate for acidic solutions</p>		
11.	<p>In which of the following ways can zero drift be reduced in pH meters?</p> <ul style="list-style-type: none"> • Using filter • Giving zero adjustment arrangement • Keeping the input impedance high • Using balanced and differential amplifiers 		
12.	<p>If it takes one drop of a certain acid to change the pH of 1 liter of an unbuffered solution from pH 8 to pH 7, how much of this same acid would be required to change the unbuffered solution from pH 5 to pH 4?</p> <ul style="list-style-type: none"> • One drop, because this is apparently what it takes to lower the pH by 1 unit • Only one tenth of a drop • 10 drops 		

	<ul style="list-style-type: none"> • 100 drops • 1000 drops 		
13.	When soil pH is measured by inserting H ⁺ ion sensitive electrode into slurry of soil suspended in pure water, the pH reading is a measure of which pool of soil acidity?		
	<ul style="list-style-type: none"> • Exchangeable acidity • Residual acidity • Potential acidity • Active acidity • Total acidity 		
14.	Which of the following is not a failure in pH meters?		
	<ul style="list-style-type: none"> • Defective electrodes • Defective input circuitry • Defective electronic circuitry • Defective calibration 		