



**NATIONAL VOCATIONAL TRAINING INSTITUTE**

**REGULATIONS AND SYLLABUS**

**FOR**

**TRADE TESTING**

**TRADE: GENERAL AGRICULTURE**

**LEVEL: CERTIFICATE TWO**

## TRADE TEST CERTIFICATE TWO

### A. INTRODUCTION

- i. The review of this syllabus has been generally influenced by the demands of industries due to its continuous change as a result of technological advancement and the changing needs of society. It was also influenced by the TVET reforms under the directions of the new educational reforms with the view to opening up further education and training opportunities to TVET graduates. The certificate TWO syllabus is designed to respond to the following level descriptors:

<b>QUALIFICATION</b>	<b>KNOWLEDGE LEVEL</b>	<b>SKILLS AND ATTITUDE:</b>
Certificate II	<ol style="list-style-type: none"><li>1. To demonstrate broad knowledge base with substantial depth in area(s) of study.</li><li>2. To demonstrate a command of analytical interpretation of range of data.</li><li>3. To present results of study accurately and reliably.</li></ol>	<ol style="list-style-type: none"><li>1. Needs varied skills and competencies in different tasks under various contexts.</li><li>2. Require a wide range of technical and supervisory skills.</li><li>3. Would be employed in different contexts.</li></ol>

- ii. Knowledge in the safe use of Agricultural tools, equipment, materials, water supply (quality of water), drainage farm sanitation, trade drawing, science and calculations

### B. THE GENERAL OBJECTIVES

On completion of this course, the trainee should be able to:

- i) understand the source and properties of quality water
- ii) to develop the skills or correct handling and use of Agricultural tools and equipment.
- iii) to understand the general principles related to land layout, demarcation and use for production (of crops, animals etc).
- iv) to understand the formation and properties of soil related to Agriculture
- v) to identify and apply soil and water conservation and management strategies.

- vi) to learn and understand the safety precaution and maintenance of the use of Agricultural tools and equipment
- vii) to understand the principles and control of soil erosion
- viii) to develop in trainees the principles and processing of Agricultural produce to reduce post-harvest losses
- ix) to develop in trainees the skills involved in drawing, trade drawing , trade science and calculations

**C. THE COURSE COMPRISES**

Trade Theory  
Science and Calculation  
Drawing  
General Paper  
Practical work

Practical work must be carefully planned to illustrate application of the theory and to provide maximum skills and understanding for on farm, laboratory work and demonstration.

**D. KNOWLEDGE AND SKILLS REQUIREMENT**

The prime objective of the Agricultural programme is to provide knowledge and skills of the trade in a manner that will best meet the needs of the trade as well as industries depending on Agriculture for production.

**E. ENTRY TO THE COURSE**

Minimum education: must have passed JHS or SHS examination. Age not below 18yrs. However, the selection of the students for the course is within the discretion of the head of the institution.

**F. ELIGIBILITY FOR ENTRY TO EXAMINATION**

Candidates may enter for examination only as internal candidate that is those who at the time of entry to the examination are undertaking (or have already completed the course at an approved establishment).

## **G. EXTERNAL EXAMINERS**

The practical work of candidates will be assessed by an external examiner appointed by the Trade Testing Commissioner.

## **H. EXAMINATION RESULTS AND CERTIFICATES**

Each candidate will receive record of performance given the grade of performance for the components taken. These are:

- i) Distinction
- ii) Credit
- iii) Pass
- iv) Referred/Fail

### **NOTE**

All Technical and Vocational trainees who aspire to take advantage of the opportunities opened to them in the educational reforms should NOTE that for a trainee to progress to certificate Two (2) a pass in Certificate One (1) is compulsory.

## **I. APPROVAL OF COURSE**

Institutions or other establishments intending to prepare trainees for the Examination must apply to:

THE COMMISSIONER  
TESTING DIVISION  
NVTI HEAD OFFICE  
P. O. BOX MB 21, ACCRA

**J. ACKNOWLEDGEMENT**

NVTI wishes to acknowledge the preparatory material done by the team of experts, which have been incorporated into this syllabus.

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Government's desire to improve the lot of Technical/Vocational Training, which led to the preparation of this syllabus, is hereby acknowledge.

## **OTHER AREAS**

### **1. LIST OF TOOLS/EQUIPMENT**

#### **SIMPLE FARM TOOLS**

Cutlass, Hoe, Mattock, Spade, Shovel, Garden Line, Garden Fork, Rake, Watering Can, Tape Measure, Hand Trowel, Shears, Secateurs, Wheel Barrow, Budding Knife, Emasculators, Sickle, Head Pan, Pick Axe, Axe, Spraying Machines etc

#### **IMPLEMENTS**

Ploughs, Harrow, Cultivators, Planters, Ridge, Sheller, Harvester

#### **EQUIPMENT**

Tractors, Power Tiller, Bulldozer, Incubator

#### **RECOMMENDED BOOKS**

1. Essential Agricultural Science  
(O. A. IWENA)
2. General Agriculture for Senior Secondary Schools  
(Ministry of Education, Ghana)
3. Systematic Approach to Agricultural Science  
(Osei Asibey Antwi)

## CERTIFICATE TWO - TRADE THEORY

ITEM	TASK	CRITICAL SKILLS	SUB SKILLS	INSTRUCTIONAL TECHNIQUES
1.0	<p><b>METHODS OF PLANT PROPAGATION</b></p> <p>1.1. By sexual</p> <p>1.2. By a sexual or vegetable propagation</p>	<p>Use of seed</p> <p>Any part of plant apart from the seed. E.g. Leave, root, cuttings, sucker, runner bulb.</p>	<p>It is a matured ovule which developed to form a plant</p>	<p>Facilitator to bring different crops, seeds and displays them before the trainees to see.</p> <p>Facilitator displays difference parts of plants of plant apart from seed for trainees to see</p>
2.0.	<p><b>WEED SCIENCE</b></p> <p>2.1. Definition of Weeds</p> <p>2.2. Importance of weeds in crop production</p> <p>2.3. Characteristics of weed</p> <p>2.4. Dispersal of weeds</p> <p>2.5. Methods of weeds control</p>	<p>It is an unwanted plant on the farm</p> <ul style="list-style-type: none"> <li>• Use as medicine</li> <li>• It controls erosion</li> <li>• It harbour pest</li> </ul> <ul style="list-style-type: none"> <li>• Have plenty seeds survive in wide range of environment.</li> <li>• Resistance to stress</li> </ul> <p>Mechanical, biological, chemical and cultural</p>	<p>Plant that is out of place Plant not cultivated by man</p> <p>It occupies space, air, water, take nutrient from soil</p> <p>Can multiply fast seeds are small and hairy</p> <p>Animals etc.</p> <p>Mechanical – Cutlass Biological – Plant and animal Chemical – Weedicide Cultural – Burning, mulching</p>	<p>Facilitator guide trainees to give meaning to the term weed</p> <p>Facilitator assist trainees to list importance of weed</p> <p>Facilitator with trainees suggest some features of weed</p> <p>Facilitator explains the dispersal of seed.</p> <p>Facilitator take trainees to weeded farm</p>

**CERTIFICATE TWO - TRADE THEORY**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
3.0.	<b>SELECTED CROPS TO BE TREATED</b>	<ul style="list-style-type: none"><li>i. Roots and tubes</li><li>ii. Spices and drugs</li><li>iii. Perfumes</li><li>iv. Cereals</li><li>v. Fruits</li></ul>	Yam, cocoyam, cassava, sweet potato Ginger, black pepper, tobacco Citronella Maize, rice sorghum etc. Banana, mango, water melon, guava, pawpaw, avocado etc.	Facilitator ask trainees to bring different crops to class  Facilitator helps the trainees to group crops in their correct areas.

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1.0	<p><b>ANIMAL HUSBANDRY</b></p> <p>1.1. Classification of Feeds</p> <p>Other Terms to be Explained</p>	<p>i. Concentrates ii. Roughages iii. Feed additives</p> <p>i. Ratios ii. Balance ration iii. Maintenance ration iv. Production ration</p>	<p>Artificial prepared animal feed Silage and hay Mineral and vitamin supplements</p> <p>i. Feed given to animals ii. Feed contains equal food components iii. Feed that help to maintain growth and body weight iv. Feed that sustain production and growth</p>	<p>Facilitator shows samples of the feed to trainees.</p> <p>Specimen such as salt, grasses, maize stalls can be taken to class for trainees to see</p> <p>Facilitator assist the trainees to give explanation to the terms</p>
2.0.	<p><b>NUTRIENTS DEFICIENCIES</b></p> <p>2.1. Definition of Nutrients</p> <p>2.2. Examples of nutrients</p> <p>2.3. Deficiencies of nutrients</p>	<p>Nutrients are substances that organism makes use of to build and repair body tissue, provide energy and regulate body temperature</p> <p>Protein, carbohydrate, fat and mineral, vitamin and water</p> <ul style="list-style-type: none"> <li>• Affect growth and development</li> <li>• Affect production</li> <li>• Animal become weak</li> <li>• Animal is prone to disease</li> </ul>	<p>It is made up of food elements or ingredient. It helps body to grow and resist disease</p> <p>Protein – Growth and repair Carbohydrate – Energy Fat and Oil – Energy Mineral – Body health</p> <ul style="list-style-type: none"> <li>• It affect output</li> <li>• Poor body function</li> <li>• Rough skin</li> <li>• Loss of weight</li> </ul>	<p>Facilitator assist trainees to mention food nutrients</p> <p>Facilitator assist trainees to list some nutrients</p> <p>Trainees should be taken to a farm where animals are reared and affected by nutrient deficiencies</p>

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3.0	<p><b>SWINE PRODUCTION</b></p> <p>3.1. Breeds of pig and their origin</p> <p>3.2. Housing and Equipment</p> <p>3.3. Feed and Feeding</p> <p>3.4. Farrowing in Pig</p> <p>3.5. Lactation and Weaning</p>	<p>Large white/Yorkshire Landrance Berkshire Poland-Chin, Durol</p> <p>Good housing system</p> <ul style="list-style-type: none"> <li>• Strongly built</li> <li>• Good drainage</li> </ul> <p>Equipment: wallow, feeding trough</p> <ul style="list-style-type: none"> <li>• Creep feeding</li> <li>• Flushing</li> </ul> <p>The term refers to the act of giving a birth to young ones</p> <p>Lactation: The period sow gives milk to the young ones</p> <p>Weaning: The time the sow deprives the litters from sucking milk</p>	<p>Others Hamsphire Tamworth</p> <p>Weed the yard to kill and drive pest infestation.</p> <p>It should be airy</p> <p>Some feed of pigs:</p> <ul style="list-style-type: none"> <li>• Concentrate</li> <li>• Yam peels or food waste from kitchen</li> </ul> <p>Duration 110 – 114days</p> <p>Period of given milk to litters</p> <p>Period of weaning the litters</p>	<p>Facilitator takes trainees to pig sty to identify different breed of pigs</p> <p>Facilitator should involve in the routine work in the pig farms</p> <p>Facilitator helps the trainees to give meaning to the terms.</p> <p>Sample feed of pig should be shown to trainees</p> <p>In the farm, the facilitator should allow trainees take part in the management of pig. E.g. pregnancy to labouring or birth</p> <p>Facilitator instruct the trainees to watch and learn how the lactation and weaning periods take place and ends.</p>



**CERTIFICATE TWO - TRADE THEORY**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
4.0	<b>RECORD KEEPING IN SWINE PRODUCTION</b>	i. Litter  ii. Feed   iii. Birth and live-weights  iv. Breeding   Monthly Inventories taken E.g. <ul style="list-style-type: none"> <li>• Tools available</li> <li>• Litter available</li> <li>• Breeding stock available</li> <li>• Weaned litter</li> <li>• Gilt available</li> </ul>	i. Date and time of stirring materials use  ii. Meaning of feed Types of feed and function of the feed  iii. Weighing the animals after birth  iv. Keep records of the number of birth animal. E.g. At birth: Death rate, birth rate  Tools and equipment present No of litters in the farm Number of breeding stock Number weaned Gilt for sale	i. Ask trainees to keep books to record each date and time activity is performed  ii. Facilitator assists the trainees to give meaning to feed: <ul style="list-style-type: none"> <li>• Suggest types of feeds</li> <li>• Function of feed</li> </ul> Use weighing scale trainees to do the weighing  Trainees to count the young ones and record them. E.g. number, alive, number dead.  The trainees should asked to count all the available. Assess in the farm and record them to show and know the current total assets in the farm

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5.0	<p><b>SHEEP AND GOAT PRODUCTION</b></p> <p>5.1. Breed and origin</p> <p>5.2. Housing and Equipment</p> <p>5.3. Feed and feeding</p> <p>5.4. Breeding Programme</p> <p>5.5. Slaughtering, Processing and Marketing</p>	<p><u>Breeding of Sheep</u> Quda, yaukosa, fellata etc.</p> <p>Breed of Goat West African Dwarf, sapel, red sokoto</p> <p>Position of the house ventilation, sanitation and general cleanliness</p> <p><u>Equipment</u></p> <ul style="list-style-type: none"> <li>• Feeding trough</li> <li>• Watering trough</li> <li>• Emasculator etc.</li> </ul> <p>Creep feeding Flushing</p> <p>Kidding lambing castration</p> <ul style="list-style-type: none"> <li>• By farmers</li> <li>• Butchers</li> <li>• Processing</li> <li>• Factories</li> </ul>	<p>Exotic:</p> <ul style="list-style-type: none"> <li>• Anglo-Nubian</li> <li>• The toggenbirg,</li> <li>• British Soanen</li> <li>• The angora</li> </ul> <p>• Surveying of site</p> <p>• Choice of site</p> <p>• Structure of the house</p> <p>• Materials for the structure</p> <p>• Drainage system</p> <p>The pen</p> <p>Silage and hay feed Salt lid Grass and legume Supplementary feed e.g. maize, cassava</p> <ul style="list-style-type: none"> <li>• Lactation and waning</li> <li>• Selection</li> <li>• Medication</li> </ul> <p>Selling to Public Selling to butchers Selling to processing factories</p>	<p>Facilitator and trainees visit to livestock breeding site to identify the breeds of sheep and goat.</p> <p>Trainees are to get involved in the preparation of the house general sanitation and cleanliness etc.</p> <p>Regular cleanliness and maintenance of the equipment should be done by trainees practical work</p> <p>Trainees are to be exposed to the various animal feed. E.g. grasses, maize, legume</p> <p>Facilitator aids the trainees to get involve in the programme of activities</p> <p>Facilitator to guide trainees to take part in activities</p>

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	<p><b>SHEEP AND GOAT PRODUCTION</b></p> <p>5.6. Disease and parasites</p>	<p>Disease: Any mal-function in the body or disorder in the body. E.g. Foot rot, mastitis Authrax, black-quarter, foot and mouth, bloat, trypanosnuasis</p>	<p>Control of disease:</p> <ul style="list-style-type: none"> <li>• Collect medication</li> <li>• Culling of animal</li> <li>• Good sanitation</li> <li>• Clean water</li> <li>• Clean pen and surroundings</li> <li>• Dispose carcass by buried or burnt</li> </ul>	<p>Facilitator get every trainees involve in all practical measures to prevent and control disease, parasite in the yard</p>
<p>1.0</p> <p>2.0.</p> <p>3.0.</p>	<p><b>FARM MAMAGENENT</b></p> <p>1.1. Management function</p> <ul style="list-style-type: none"> <li>• Planning</li> <li>• Co-ordinating</li> <li>• Directing</li> <li>• Evaluation</li> </ul> <p>2.1. <u>Farm Accounts</u> Posting data in ledgers up to the profit and loss</p> <p>Farm Record</p> <p>3.1. Difference between oral and written records</p> <p>3.2. Define the term record</p> <p>3.3. Importance of written records</p>	<ul style="list-style-type: none"> <li>• Determine the going of the project</li> <li>• Joining the sectors</li> <li>• Giving instructions</li> <li>• Finding the outcome of the project</li> </ul> <p>Some Account to keep</p> <ul style="list-style-type: none"> <li>• Profit and Loss Account</li> <li>• Cash flow Account</li> <li>• Balance sheet</li> </ul> <p>Oral records: Is information given plainly. It is not put down</p> <p>It is document about events that had passed</p> <ul style="list-style-type: none"> <li>• Gives history of the project</li> <li>• Can be used to obtain loan</li> <li>• It helps to bring continuity of project after death</li> <li>• It exposes progress or retrogress of a project</li> </ul>	<p>Simple definition of the terms</p> <p>Get ledgers books Put every information on the purchase and sale in the ledger books</p> <p>Written Record is information which is written and pass to generation</p> <p>Example:</p> <ul style="list-style-type: none"> <li>• Inventory record,</li> <li>• Profit and Loss</li> <li>• Daily records,</li> <li>• Production records</li> </ul> <p>4. Litter record</p>	<p>The facilitator guide the trainees to develop simple definition of the terms</p> <p>Guide learners t o learn Accounting terms. E.g. Profit, Loss Ledger, Balance sheet Cash flow</p> <p>Teaching process</p> <p>Lecturing method</p> <ul style="list-style-type: none"> <li>• Trainees open Daily record on projects</li> <li>• Facilitator show sample records to trainees</li> </ul>

**CERTIFICATE TWO - TRADE THEORY**

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4.0.	<b>LANDS ACQUISITION</b>  4.1. Land Tenure System  4.2. Types of Tenure system  4.3. Comparison of the various land Tenure	The way land is acquired  <ul style="list-style-type: none"> <li>• Cash lease</li> <li>• Share</li> <li>• Share lease</li> <li>• Group tenancy or communal</li> </ul> Give definition of each of them to bring out their differences	<ul style="list-style-type: none"> <li>• The study of farming system</li> <li>• Ways farm lands are given to farmers to farm</li> </ul>	Facilitator guides trainees to give meaning to Land tenure systems  Facilitator aid the learners to suggest the various types of tenancy.  Facilitator suggests how their parents acquire land for farming in their locality
5.0.	<b>DEPRECIATION</b>  5.1. Definition of Depreciation  5.2. Method used to Calculate Depreciation	Wear and tear E.g. an Assets (E.g Tractor building, dams)  i. Straight line ii. Diminishing or declining balance iii. Sum of year digits method	The study of an Assets which is worn out. E.g. a car, tyre and old building  Working sample of each method to bring out their difference	Facilitator takes trainees to see new and old tyre An old building An old car  Trainees do exercise base on their understanding on each method
6.0.	<b>PRODUCT MARKET</b>  6.1. Definition of Demand and Supply of Agricultural Commodities or Goods	<u>Demand</u>  Amount or quality of goods or services which a consumer is willing and able to buy at a giving price at a particular time.  Supply: The quantity of commodity which a producer is willing and able to offer for sale at a given price over a particular period of time	Suggested definition from the learners	Facilitator assists trainees to give definition to the terms demand and supply

## CERTIFICATE TWO - TRADE THEORY

ITEM	TASK	CRITICAL SKILLS	SUB SKILLS	INSTRUCTIONAL TECHNIQUES
	6.2. Demand and Supply Schedule  Demand and supply curve	It is an information or data put in a tabular form  It is the used of data or information in a tabular form to draw a curve to represent it	Putting information or data in a tabular form  Drawing curve from the information or data given	Facilitator ask learners to give numbers or date and put them in a table form  Facilitator with the trainees used the schedule to draw a curve
7.0	<b>MEASURES OF FARM EFFICIENCY</b>  7.1. Break-even analysis and calculation	Condition or situation which result in no profit or losses	<ul style="list-style-type: none"> <li>• Calculate to get profit</li> <li>• Calculate to get no loss or profit</li> </ul>	Facilitator assists trainees to do simple calculation to indicate Loss, Profit and no Loss or Profit
8.0.	<b>RISKS AND UNCERTAINTIES IN AGRICULTURAL PRODUCTION</b>  Natural Disasters	Fire, Accident, Tremor, volcano, burns etc.	Visit to some disaster sites, E.g. Car burning Car accident volcanocity	Facilitator assist trainees to suggest any disaster he/she has been
9.0	<b>MARKETING</b>  9.1. Marketing services	Transport, storage processing, branding, grading, sorting	Producer Middlemen Retailer	Trainees try to tell whom these people are

**CERTIFICATE TWO - TRADE THEORY**

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	<p>9.2. Marketing Agencies</p> <p>9.3. Marketing Problems</p>	<p>Country buyers Wholesalers Food distribution Co CMB Co-operatives</p> <p>Risk bearing E.g.</p> <ul style="list-style-type: none"> <li>• Fire</li> <li>• Price instability</li> <li>• Poor storage facilities</li> <li>• Poor transportation</li> </ul>	<p>Study the full meaning of the terms E.g.</p> <ul style="list-style-type: none"> <li>• Country buyers</li> <li>• Wholesalers</li> <li>• Retailers</li> <li>• Food distribution Co.</li> <li>• Cocoa Marketing Board</li> <li>• Co-operatives</li> </ul> <ul style="list-style-type: none"> <li>• More warehouses</li> <li>• Improvement in the road network</li> <li>• Price stability</li> </ul>	<p>The facilitator assists the Trainees to give meanings to the terms</p> <p>The facilitator assists the trainees to suggest solutions to the mentioned marketing problems</p>
<p>1.0.</p>	<p><b>OBSTACLES IN CHAINING</b></p> <p>1.1. Obstacles that prevent chaining but not ranging</p> <p>1.2. Obstacles that prevent ranging but not chaining</p> <p>1.3. Obstacles that prevent both chaining and ranging</p>	<p>Pond</p> <p>Halls</p> <p>Building</p>	<p>Mentioning of some obstacles E.g. Mounts, rivers, big trees, rock, pillars etc.</p>	<p>Visit to see a pond. Serving as obstacle Trees as obstacle, mountain, rocks, big rock and other features which act and serve as obstacles</p>

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2.0.	<p><b>SETTING AND BOOKING IN CHAINING</b></p> <p>2.1. Reconnaissance</p> <p>2.2. Setting out and ranging</p> <p>2.3. Measurement and taking offsets in chaining</p> <p>2.4. Recordings</p> <p>2.5. Plottings</p>	<p>Explanation to these items and going out to perform</p>	<p>Tools:</p> <ul style="list-style-type: none"> <li>Ranging pole, compass, pegs, cutlass</li> </ul> <p>Pen/pencil Record notebook</p>	<p>Facilitator with the learners do all the practical work on the field after classroom explanations</p>
3.0.	<p><b>LINING AND PEGGING</b></p> <p>3.1. Definition of Lining and Pegging</p> <p>3.2. Different types of spacing</p>	<p>The use of garden line and pegs to make straight line in the farm</p> <p>Simple, double staggered Triangle, square, rectangular spacing</p>		<p>Facilitator involves the trainers to take part in the practical field work.</p> <p>Put trainers in group with leaders. Trainer supervises the work of the learners as they are going on the field</p>
4.0.	<p><b>DEFINITION AND IMPORTANCE OF</b></p> <p>4.1. Contour lines</p> <p>4.2. Bench mark</p> <p>4.3. Datum surface</p> <p>4.4. Offsets</p>	<p>It is a line draw to show area of equal level.</p> <p>It is the initial or basal marking of a survey</p>		

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<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
1.0.	<p><b>SOIL FORMATION</b></p> <p>1.1. Factors affecting soil formation</p> <p>1.2. Composition of soil</p>	<ul style="list-style-type: none"> <li>• Climate: (Temperature, rainfall, wind pressure)</li> <li>• Parent material</li> <li>• Topograph/relief</li> <li>• Biotic factor or living organism</li> <li>• Time</li> </ul> <p>Gases: Air Water, Acid etc. Solids: Minerals, organic matter Root and living organism. E.g. worm, microbes</p>	<p>The study weathering Type of weathering E.g.</p> <ul style="list-style-type: none"> <li>• Physical</li> <li>• Chemical</li> <li>• Biological</li> </ul> <ul style="list-style-type: none"> <li>• Study experiment to reveal the soil particles</li> <li>• Grow crops on dry and wet soil</li> <li>• Experiment to reveal organic matter in soil</li> </ul>	<p>Facilitator explains each process can cause soil formation E.g.</p> <ul style="list-style-type: none"> <li>• Physical process</li> <li>• Chemical process</li> <li>• Biological process</li> </ul> <p>Facilitator put the trainees into groups with leader to perform the various experiments</p>
2.0.	<p><b>SOIL PROPERTIES</b></p> <p>2.1. Soil texture Soil structure</p> <p>2.2. Simple experiment to determine the properties are essential</p> <p>2.3. The proportion of different soil components in relation to agricultural activities</p>	<p>Texture: Soil fraction Soil silt and clay</p> <p>Structure: The aggregate of the soil particles</p> <p>Experiment to find soil fraction/sand silt and clay</p> <p>The heaviness/lightness of the soil The velocity movement of water. Fast/low Movement of water in the soil</p>	<p>Study sample Soil E.g. sand, silt, clay, humus, loam</p> <p>Study sedimentation process</p> <p>Consider texture and structure Consider texture and structure</p>	<p>The Facilitator with the trainee take sample soil to class for trainees to feel and work with them</p> <p>Facilitator ask to mention the importance of the term</p>

**CERTIFICATE TWO - TRADE THEORY**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
3.0	The proportion of different soil components in relation to agricultural activities	Tillage, irrigation drainage, seedbed preparation, erosion	Discuss the importance of tillage, irrigation, drainage, seedbed preparation	Exercise is given to learners to do to show their understanding.
4.0.	<p><b>PLANT NUTRITION</b></p> <p>4.1. Soil fertility and productivity</p> <p>4.2. Factors that lead to loss in soil fertility</p> <p>4.3. Maintenance and soil fertility</p>	<p>Fertile soil is a soil with enough nutrient to survive plant growth.</p> <p>Productive soil is the soil that can help plant to grow and produce fruit well</p> <p>Burning, overgrazing, leaching, over cropping, erosion</p> <p>i. Green Manuring ii. Erosion control iii. Crop rotation</p>	<p>The study about the nutrient in the soil</p> <p>The study of some farm cultural practices. E.g. burning, stiring</p> <ul style="list-style-type: none"> <li>• Fertilizer application</li> <li>• Weeding, mulching</li> <li>• Application of green manuring</li> </ul>	<p>The facilitator guide trainees to give manure to soil fertility and production</p> <p>The facilitator asks the trainee to burn their own farmland to prepare a bed</p> <p>Trainees are asked to practice crop rotation system Use sandbag to control erosion</p>

**CERTIFICATE TWO - TRADE THEORY**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
1.0	<p><b>FARM TRANSPORTATION EQUIPMENT</b></p> <p>1.1. Wagon</p> <p>1.2 Pick-ups</p> <p>Tractor with trailer</p>	<p><b>AGRICULTURAL MECHANIZATION</b></p>	<p>The study about farm tools, equipment and implement</p>	<p>The facilitator show examples of tractor with trailers</p>
2.0.	<p><b>TRACTOR</b></p> <p>2.1. Types</p> <p>2.2. Make ups</p>	<p>Pneumatic and wheel tractor</p> <p>M.F. Zettor</p> <p>David Brow</p> <p>Ford and Fiat</p> <p>Massay Ferguson</p>		<p>The Facilitator show examples of tractor with trailers</p> <p>Facilitator aid the trainees to identify types of tractors</p> <p>Facilitator and the trainees to examine the tractor make ups</p>
3.0.	<p><b>ENGINES</b></p> <p>3.1. The components if the Internal Combustion Engine</p> <p>3.2. Differences between a 4-stroke engine and 2-stroke engine</p> <p>3.3. Simple definitions</p>	<p>Piston, cylinders cooling system, gear box etc.</p> <p>Stroke, power, bottom, dead centre, top dead centre, piston displacement, clearance volume, total cylinder volume</p> <p>compression ratio</p>	<p>Labelling parts of a tractor</p> <p>The study of types of strokes</p> <p>The study of mechanizational terms</p>	<p>Facilitator guide trainees to label the parts of tractor</p> <p>Facilitator suggest the difference between 2-troke and 4-stroke</p> <p>Trainees are taken to experimental form on field trip to see tractor with parts.</p>

**CERTIFICATE TWO - TRADE THEORY**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
	3.4. Problems of mechanization in Ghana  3.5. Suggestion and solutions	Lack of parts The natural weather, Soil and vegetation Lack of good effective technician	The study of problems and solutions of Agriculture in Ghana	

**CERTIFICATE TWO - TRADE PRACTICAL**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
1.0	<p><b>COMPOSTING</b></p> <p>1.1. Meaning of Composting</p> <p>1.2. Component of compost</p> <p>1.3. Preparation of compost heap</p> <p>a. Types</p> <p>b. Process or activities</p>	<p>Rotting down of plant and animal remains in heap before residue is applied to soil</p> <p>Household refuse Crop residue Waste vegetable Animal/human excreta Tester.</p> <p>Stalk method Pit method</p> <ul style="list-style-type: none"> <li>• Applying starters</li> <li>• Liming</li> <li>• Testing</li> <li>• Watering</li> <li>• Turning</li> <li>• Maturity, storage</li> </ul>	<p>Study the fertility of the soil</p> <p>Study how organic matter get rotten (E.g. by air and water).</p> <p>The study of the use of organic substance.</p> <p>Study the activity step by step up to storage</p>	<p>Facilitator collect compost materials both dead/fresh Facilitator aid trainees to define compost.</p> <p>Facilitator gather some waste materials from houses farm, school etc.</p> <p>Learners gather material in heap. Trainees dig a pit with the help of a facilitator</p> <p>Facilitator guide the trainees to do the activities one by one in groups or individuals</p>
2.0.	<p><b>IMPORTANCE OF COMPOST</b></p> <p>2.1. Disadvantages of compost</p>	<ul style="list-style-type: none"> <li>• Good source of organic manure</li> <li>• It improve soil structure</li> <li>• Waste material is put into better use for plant</li> <li>• Promote micro be activities</li> <li>• Help conserve moisture</li> <li>• It is uneconomical on a large scale</li> <li>• Preparation is a difficult task</li> <li>• It may caution weeds</li> <li>• It may need more labour for application.</li> <li>• It has a pangent smell</li> </ul>	<p>The study of soil fertility</p> <p>The study of organic matter and its uses in the soil</p>	<p>Facilitator assist the trainees to suggest the importance of organic matter</p> <p>Trainees with the aid of facilitator follow the precaution, procedure</p>

**CERTIFICATE TWO - TRADE PRACTICAL**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
	2.2. <b>PRECAUTION</b>	<ul style="list-style-type: none"> <li>• Layer must be moist all the time</li> <li>• Layers must be turned twice a week</li> <li>• Temperature must be tested with stick</li> <li>• Layers must not be too compact</li> <li>• Heaped covered with polythene sheet</li> </ul>	Trainee study organic matter	Trainees with the aid of facilitator follow the precaution procedure
1.0.	<b>BED PREPARATION</b>  1.1. Land cleaning  1.2. Bed making a. Type b. Dimensions  1.3. Tools  1.4. Maintenance of Farm tools	Surveying the land Weeding Burning Stumping  Raise bed Flat bed Sunken bed 120cm: 720cm or 12:72m  Cutlass, mattock, hoe, pick-axe, thread or garden line, rake.  Washing and drying Smearing with oil Store at termite free-room Tightening bolt and nut Use right tool to do right job	The study of crops E.g. Maize, groundnut, oil palm, vegetable.  The study of farm tools and their uses.  The study of tools and their maintenance.  Study the farm tools and their uses	The trainees clear the land with the supervision of the facilitator.  Activities should be done with the help of the facilitator.  Trainees handle, wash and maintain the tools with the aid of the Facilitator.  Trainees handle and use tools in the farm with the aid of the Facilitator.

**CERTIFICATE TWO - TRADE PRACTICAL**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
1.0.	<p><b>SOIL</b></p> <p>1.1. Classification</p> <p>1.2. Physical characteristic of soil e.g. sandy, loamey and clayed</p>	<p>Sand, loam, clay</p> <p>Sand: rough and coarse Loose or single Low water, high air, low nutrient, not sticky</p> <p>Loam: Intermediate, high nutrient</p> <p>Clayed:</p> <ul style="list-style-type: none"> <li>• Smooth,</li> <li>• Compact,</li> <li>• High water holding capacity,</li> <li>• Tightly packed,</li> <li>• Low air holding</li> <li>• High nutrient</li> <li>• Sticky when wet</li> </ul>	<p>Study the physical weathering and the formation of soil.</p> <p>Study the behaviour of sand Loam and clay with relationship to it texture, nutrient, water holding capacity and air content</p>	<p>Trainee study weathering and soil formation process with the facilitator.</p> <p>Trainees gather samples of soil. E.g. sand, loam and clay and watch their behaviour with the respect to nutrient, air, water, texture content aided by the facilitator</p>

**CERTIFICATE TWO - TRADE SCIENCE AND CALCULATION**

<b>ITEM</b>	<b>TASK</b>	<b>CRITICAL SKILLS</b>	<b>SUB SKILLS</b>	<b>INSTRUCTIONAL TECHNIQUES</b>
1.0.	<b>MEASUREMENT</b>			
	1.1. Bed	Measure the dimension of a bed. E.g. length, breadth	Study the preparation of a nursery bed	Facilitator ask trainees to demonstrate the measurement of bed.
	1.2. Discussion of good fertile bed	The properties of a good fertile bed <ul style="list-style-type: none"> <li>• It is friable</li> <li>• Enough water content</li> <li>• Enough air</li> <li>• Enough organic matter</li> </ul>	Study the characteristic of a fertile soil.	Facilitator asks the trainee to experiment to see the properties of soil
	1.3. Weighing	<ul style="list-style-type: none"> <li>• A bag of maize on the scale</li> <li>• A feed for poultry</li> <li>• A broiler</li> </ul>	<ul style="list-style-type: none"> <li>• The study of cereal as maize</li> <li>• Feed and feeding of poultry</li> </ul>	Facilitator aids the learners to weigh feed for poultry.  To pack maize in bags and weigh on the scale
	1.4. Calculation	Calculate the area of a bed with 30cm width and 50cm length	Study the calculation of some figure such as square, triangle, rectangle	The facilitator asks the Trainees to calculate the dimension of beds. E.g. 30cm by 50cm.
1.0	<b>CALCULATIONS</b>			
	1.1. Farm land	Length Breadth Area	Farm land	Facilitator survey the land with the trainees
	1.2. Materials needed	Cutlass, compass ranging pole. Tape measure	Trainees to carry the materials	Facilitator with the assistance of trainees take length and breadth, dimension and allow the trainees to calculate for the results. E.g.
	1.3. Measurement	Length – 200m Breadth – 150m Area – 30,000m <sup>2</sup>	Length – 200m Breadth – 150m Area – 30,000m <sup>2</sup>	

**LEVEL – CERTIFICATE TWO – TEST SPECIFICATION TABLE  
TRADE THEORY (OBJECTIVE)**

<b>NO</b>	<b>TOPIC</b>	<b>COGNITIVE KNOWLEDGE</b>	<b>AFFECTIVE UNDERSTANDING</b>	<b>PSYCHOMOTOR APPLICATION</b>	<b>TOTAL</b>
1.	Definition Weed	2	2	1	5
2.	Mechanical	1	2	2	5
3.	Chemical	2	2	1	5
4.	Biological	1	1	3	5
5.	Cultural	2	2	1	5
6.					25