

16.0 AGRICULTURE (443)



The year 2009 K.C.S.E Agriculture Examination consisted of three papers, **Paper 1**, **Paper 2** and **Paper 3**. The three papers tested the candidates' competence in understanding the agricultural principles, concepts and practices as stipulated in the syllabus. A wide range of knowledge and skills was tested in order to bring out the different abilities of the candidates. The format of the three papers is as follows:

- **Paper 1 (443/1):** This is a theory paper that covers **General Agriculture, Crop Production, Agriculture Economics and Soil and Water Conservation**. It has three sections, **A, B and C**, which are marked out of 30, 20 and 40 marks respectively.
- **Paper 2 (443/2):** It is also a theory paper but covers **Livestock Production, Farm Power, Farm Machinery, Farm Structures and Farm Tools and Equipment**. It has three sections, **A, B and C**, which are also marked out of 30, 20 and 40 marks respectively.
- **Paper 3 (443/3):** This is a project paper with two project questions, **Project A and B**. In 2009, Project A required candidates to **rear rabbits** while B was on production of either **Nappier Grass/Bano Grass or cabbages/kales**. Candidates selected and carried out only one of the two projects. The paper is scored out of 100 marks.

16.1 CANDIDATES' OVERALL PERFORMANCE

The table below shows the general performance of candidates in the year 2009 KCSE Agriculture Examination. Performance in the previous three years has been included for comparison.

Table 21: Candidates overall performance in Agriculture for the last four years

YEAR	PAPER	CANDIDATURE	MAXIMUM MARK	MEAN SCORE	STANDARD DEVIATION
2009	1		90	33.54	15.10
	2		90	34.91	13.49
	Overall	137,217	180	77.67	29.12
2008	1		90	32.32	15.11
	2		90	25.59	11.64
	Overall	134,039	180	67.1	27.32
2007	1		90	26.94	12.04
	2		90	53.98	16.89
	Overall	121,193	180	87.34	28.00
2006	1		90	32.67	11.99
	2		90	37.53	12.57
	Overall	107,068	180	77.56	24.00

The following observations can be made from the summary in the table:

- 16.1.1 Candidates' performance in Agriculture improved. This is shown by the rise in the mean scores for the two papers. **Paper 1 (443/1)** mean score rose from **32.32** in the year 2008 to **33.54** in the year 2009. The mean score for **Paper 2 (443/2)** significantly improved from **25.59** in the year 2008 to **34.91** in the year 2009.
- 16.1.2 The candidates' overall performance significantly went up as shown by the subject mean score, which improved from **67.10** in the year 2008 to **77.67** in the year 2009.

- 16.1.3 The overall standard deviation for the two papers improved from 27.32 in the year 2008 to 29.12 in the year 2009. This means that the two papers were able to discriminate candidates of different abilities.
- 16.1.4 The candidature increased from 134,039 in the year 2008 to 137,217 in the year 2009. A similar trend was also observed in the years 2008, 2007 and 2006. This is a likely indication of increasing popularity of the subject in schools.

ANALYSIS OF POORLY PERFORMED QUESTIONS

The following is the analysis of the items that were poorly performed by candidates in the year 2009 KCSE Agriculture examination. This report highlights these questions and gives the expected responses. It also offers advice to teachers on the possible methodologies to emphasise during instruction.

16.2 PAPER 1 (443/1)

Question 13

Distinguish between the terms hybrid and composite as used in maize breeding

The item was developed from the content on maize production. It required candidates to give the differences between the two terms.

Weaknesses

Most candidates were unable to give the difference between the two terms.

Expected responses

- **Hybrid** is bred by crossing inbred varieties/inbred lines under controlled pollination.
- **Composite** is bred by crossing a number of varieties under uncontrolled/open pollination.

Advice to teachers

During instruction, teachers should emphasize and ensure that learners understand the technical terms used in agriculture.

Question 24

(b) Describe how the tertiary operation named in (a) is carried out.

The question was derived from the topic, **Land Preparation**. Candidates were expected to give the procedure of ridging.

Weaknesses

Most candidates were unable to explain how ridging is carried out.

Expected response

Soil is dug in a continuous line; and heaped on the side(s); to form a bund/ridge.

Advice to teachers

The item is centred on the practical aspect in land preparation. The procedure can easily be produced by candidates exposed to a practical lesson. Objectives on psychomotor skills should be approached practically during teaching.

Question 26

Name the deficient nutrient element in plants showing the following symptoms:

- a) Stunted growth, die back of plant tips, leaves roll up and chlorosis along margins of younger leaves
- b) Yellowing of leaves appears first on lower leaves, leaves turn brown and fall prematurely, stunted growth
- c) Leaf culling, yellowing of leaves, tips and edges of leaves are scorched and have small mottles

- d) Purpling of leaves, stunted growth, slender stalks and lateral buds remain dormant.

Weaknesses

Most candidates were unable to identify the deficient nutrient element from the provided symptoms.

Expected responses

- (a) Calcium
- (b) Nitrogen
- (c) Potassium
- (d) Phosphorus

Advice to teachers

Teachers should strive to ensure that the learner acquires the intended knowledge or skill to enable him/her to handle the different forms in which an item comes.

16.3 PAPER 2 (443/2)

No poorly performed items were reported from this paper.

16.4 PAPER 3 (443/3 –PROJECT)

Is the agriculture project paper administered to provide an opportunity for the candidates to show and put into practice, the psychomotor skills acquired during the four years period in secondary schools.

Candidates are tested in practical skills in the growing of a selected crop from land preparation to harvesting, rearing selected livestock to maturity or constructing a farm structure such as beehive, feed trough, rabbit hutch, compost pit/heap, among others.

The instructions are taken to schools, which then provide the required inputs for candidates to carry out the project work independently. The project takes eight months, from February to September of the given year.

In the year 2009, candidates chose between rabbit rearing and production of nappier grass/bana grass or cabbages/kales. The agriculture teacher's duty was to objectively assess and evaluate each candidate's work at all the stages of project implementation.

16.5 GENERAL ADVICE TO TEACHERS

- 16.5.1 The whole syllabus should be effectively covered during instruction because examination items will be sampled from the entire syllabus.
- 16.5.2 The teacher/school should acquire the relevant reference materials and assist candidates to obtain and use the recommended textbooks.
- 16.5.3 The use of textbooks by teachers should always be guided by the syllabus. The specific objectives stipulated in the syllabus should be correctly interpreted to ensure the topics in question are taught adequately and effectively.
- 16.5.4 A variety of teaching methods and resources should be utilised by teachers to ensure that the content is effectively delivered during instruction. Resource persons/guest speakers and field visits should be arranged and used in areas where the teacher and the school lack the resources to teach the topic/lesson effectively.
- 16.5.5 All the suggested practical activities in the syllabus should be carried out to prepare candidates adequately for questions that require application of psychomotor skills acquired during instruction.

17.0 WOODWORK (444)

In 2009, Woodwork was tested using a **theory paper (444/1)** and **project paper 444/2**. The project was set by the Council but administered and scored by the subject teachers.

17.1 CANDIDATES GENERAL PERFORMANCE

The table below gives performance in the subject for the years 2004, 2005, 2008 and 2009.

Table 22: Candidates' Overall Performance in Woodwork for the Years, 2004, 2005, 2008 and 2009.

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2004	1		60	24.50	8.69
	2		40	30.67	5.90
	Overall	1,156	100	54.11	14.00
2005	1		60	19.35	7.72
	2		40	32.70	4.65
	Overall	1,052	100	51.70	10.00
2008	1		60	27.84	9.23
	2		40	18.61	4.93
	Overall	98	100	46.45	12.89
2009	1		60	28.27	10.30
	2		40	18.84	6.07
	Overall	424	100	47.12	15.49

From the table above, it is to be observed that:

- (i) The candidates for the subject increased from 98 in 2008 to 424 in 2009.
- (ii) Performance in theory paper improved from a mean of 27.84 in 2008 to a mean mark of 28.27 in 2009.
- (iii) There was slight improvement in the project paper where the mean went up by 0.23
- (iv) Overall performance in the subject improved from a mean of 46.45 in 2008 to 47.12 with an improved standard deviation of 15.49.

Questions which were poorly performed are discussed below.

Question 5

With the aid of sketches, show the difference between a wire nail and a panel pin nail.

Candidates were expected to know the difference between the types of nails. They were also expected to sketch the wire nail and the panel pin to show their features such as the different sizes of the heads, sizes in forms of length and thickness.

Weakness

The few candidates who did not get the answer correctly did not know the panel pin.

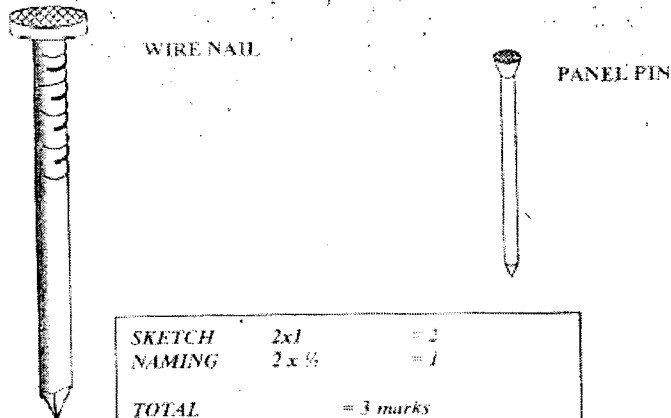
This weakness may have been caused by teachers not making sure that they have kept sample nails to use when teaching and also encouraging the candidates to be often making sketches of the types of nails.

Advice to teachers

Teachers to study the syllabus topics and use the topics to prepare teaching aids and materials. A variety of nails is required in the workshop.

Expected responses

Difference between a wire nail and a panel pin nail.



Question 7

- State four types of surface finishes that would be used to protect a wood surface against water penetration.
- Sketch a pictorial view of a bench hook.
 - Candidates were expected to know the types of wood surface finishes that can be used to protect the surfaces from water penetration.
 - They were also expected to know and sketch a Bench hook.

Weaknesses

A major weakness was noticed on knowledge of wood surface finishes. This could have been caused by teachers not covering the syllabus topic "Finishing".

Advice to teachers

Teachers should teach all the types of wood surface finishes e.g application of bleaches, paints, stains wood fillers, shellac, varnish, lacquer.

Expected Responses

Types of wood surface finishes.

- Paint
- Varnish
- Wax
- Polish
- Lacquer

Question 8

Name **four** types of wood fillers.

Candidates were expected to know the types of wood fillers.

Weakness

Most candidates could only remember the use of saw dust as a filler but could not remember the rest. This could have been caused by lack of proper tuition.

Advice to teachers

When covering the topic 'FINISHING' make sure you also teach the types of wood fillers.

Expected Responses

Types of wood fillers:

- Plaster of paris

- Paste filler
- Staining filler
- Saw dust filler

Question 10

Figure 1 Shows a rectangle ABCD

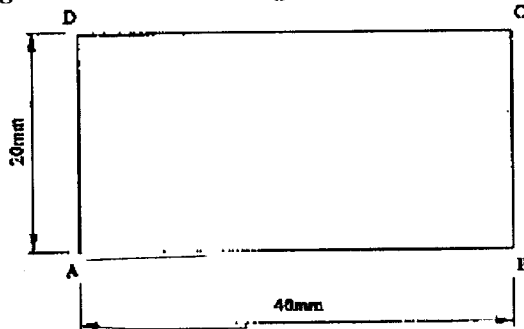


Figure 1

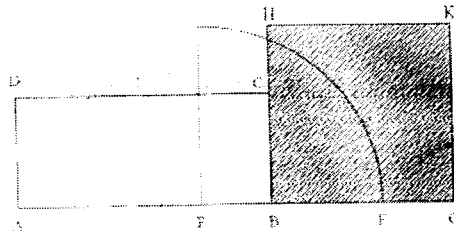
Copy the rectangle hence convert the rectangle into a square of equal area.

Candidates were expected to have covered the topics on geometry to be able to handle this question well.

Weakness

A number of candidates did not attempt this question at all, while those who attempted it had no problem. For those who did not attempt this question it could be because they were not taught.

Expected Responses



Question 15

- State THREE reasons for staining timber
- Outline the procedure of measuring stock
- Use labeled sketches to show two flush finishing of screws

- Candidates were expected to know reasons for staining timber.
- Candidates were also expected to outline the procedure of measuring stock.
- Sketch and label two ways of 'flush finishing of screws'.

Weakness

Most candidates avoided part 'b' of the question. This could have been as a result of lack of tuition or misunderstanding the question.

Advice to teachers

Give more practice on procedures for doing things in the workshop particularly working with tools and materials. Candidates should also be taught to pick out the guiding verbs in a question and also the key words or phrases plan and then start writing response.

Expected Responses

a) Reasons for staining timber

- To make colour of all parts of an item uniform.
- To change the colour of timber to a desired colour
- To harmonize a job with the colour of other items.
- Improve the appearance of cheap, colourless timber.

b) Measuring stock

Length:

- Place the left end of the ruler directly over one end of the stock with the ruler on edge.
- Read at the other end of the measurement on the ruler

Width:

- Measure the width by holding the left end of the ruler on one edge of the stock.
- Slide right thumb along the ruler until you can read the correct width.

Thickness:

- Support the ruler with one hand over the edge with the tip on furthest corner
- Read the graduation just above the near corner.
- For counterboring, a hole the width of the head is bored in the top piece to a depth equal to the depth of the screw head.
- For countersinking; a seat for the base of screw head is formed.