

17.0 AGRICULTURE (443)

In the year 2011 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 2011, Project A required candidates to **prepare compost manure** while B was on production of **beans or onions**. 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 2011 KCSE Agriculture Examination. Performance in the previous four years has been included for comparison.

Table 28: Candidates overall performance in Agriculture for the last four years

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2011	1	167,709	90	26.33	13.73
	2		90	40.30	15.29
	Overall		180	74.33	29.62
2010	1	140,237	90	24.82	11.58
	2		90	36.07	15.07
	Overall		180	67.96	27.12
2009	1	137,217	90	33.54	15.10
	2		90	34.91	13.49
	Overall		180	77.67	29.12
2008	1	134,039	90	32.32	15.11
	2		90	25.59	11.64
	Overall		180	67.1	27.32
2007	1	121,193	90	26.94	12.04
	2		90	53.98	16.89
	Overall		180	87.34	28.00

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 improvement in the overall score from **67.96** in 2010 to **74.33** in 2011. **Paper 1 (443/1)** mean score improved from **24.82** in the year 2010 to **6.33** in the year 2011. The mean score for **Paper 2 (443/2)** improved from **36.07** in the year 2010 to **40.30** in the year 2011.
- 16.1.3 The overall standard deviation improved from **27.12** in the year 2010 to **29.62** in 2011. The value of the standard deviation indicates that the two papers were able to adequately discriminate candidates of different abilities.
- 16.1.4 The candidature increased from **140,237** in the year 2010 to **167,709** in 2011. A similar trend was also observed in the years **2010, 2009, 2009** and **2007**. This is a likely indication of increasing popularity of the subject in schools.

17.2 ANALYSIS OF POORLY PERFORMED QUESTIONS

The following is the analysis of the items that were poorly performed by candidates in the year 2011 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.

17.3 Paper 1 (443/1)

Questions 2

Give **two** examples for each of the following types of costs incurred in broiler production.

- (a) variable costs; (1 mark)
- (b) fixed costs. (1 mark)

Weaknesses

- Some candidates were not able to distinguish between fixed and variable costs

Expected Responses

(a) Variable costs

- Wages for casual labour
- Costs of foods and water
- Costs of drugs/chemicals and treatment.

(2 x 1/2) (1 mark)

(b) Fixed costs

- Land rent/house rent

- Salaries of regular/permanent labour
- Depreciation of machinery
- Interest on borrowed loan.

(2 x 1/2) (1 mark)

Question 8

State the use of each of the following in farm accounting:

- (a) balance sheet; (½ mark)
- (b) inventory; (½ mark)
- (c) cash book. (½ mark)

Weaknesses

- Some candidates did not understand the meaning of the terminologies.

Expected responses

(a) Balance sheet

- Showing the financial position of the farm business at a particular period of the year.

(1 x 1/2) (1/2mark)

(b) Inventory

- Recording all the assets owned by the farm business.

(1 x 1/2) (1/2mark)

(c) Cash book

- Recording all transactions involving receiving and paying out of cash on the farm business.

(1 x 1/2) (1/2 mark)

Question 9

State **four** functions of Agricultural Society of Kenya (A.S.K.).

(2 marks)

Weaknesses

- Most candidates did not understand the functions of ASK.

Expected responses

- Holding competitive agricultural shows and exhibitions of livestock, crop and farm produce.
- Encouraging breeding and importation of pure breeds and improvement of indigenous livestock.
- Encouraging and assisting in official milk recording scheme.
- Organising the running of Young Farmers Clubs
- Publishing the Kenya Stud Book.
- Organising the National Ploughing Contest

- Publishing the monthly journal; "The Kenya Farmer"
- Awarding bursaries for local and overseas studies/tours for its members.

(4 x 1/2) (2 marks)

Question 11

Give **two** reasons for imposing quarantine on imported planting materials.

(1 mark)

Weaknesses

- Most candidates did not know the objective of imposing quarantine as a measure of weed control.

Expected response

- To test them for purity to prevent entry of noxious/foreign weeds into the country.
- To test them for purity to prevent entry/spread of pests and diseases into the country.

(2 x 1/2) (1 mark)

Question 15

Name **four** settlement schemes that the Kenyan government started as a result of the success of the Million Acre Scheme.

(2 marks)

Weaknesses

Most of the candidates were not able to give the correct identities of the settlement schemes.

Expected response

- Jet schemes
- Haraka schemes
- Shirika schemes
- Lari settlement scheme
- The squatter's settlement scheme.

(2 marks)

Question 20 (b)

Describe the procedure followed in preparing seed potatoes for planting.

(3 marks)

Weaknesses

- Most candidates were not able to come up with the procedure of chitting.
- There was no flow in their responses.

Expected response

Procedure of chitting

- Arrange the setts/tubers in a store with the rose-end facing upwards.

- Tubers are arranged 2-3 layers deep.
- Allow diffuse light through the store.
- Dust (spray) the setts/tubers with an appropriate insecticide to control pests/aphids/ tuber moths
- Sprinkle some water on tubers if the conditions are dry.

(3 x 1) (3 marks)

17.4 Paper 2 (443/2)

Questions 13 (b)

Give the meaning of the following terms as used in livestock breeding:

(b) epistasis. (1 mark)

Weaknesses

- Majority of candidates had no idea on epistasis and even some teachers had a problem with the term.
- Some candidates confused epistasis with peristalsis.

Expected response

Epistasis: Gene interaction in which the expression of some alleles is blocked (masked).

(1 x 1 = 1 mark)

Question 25

(a) Describe the feeding practices in artificial rearing of a dairy calf. (10 marks)

Weaknesses

- Most candidates only concentrated on bucket feeding instead of the entire feeding practices in the artificial rearing of a dairy calf.

Expected response

- Train the calf to feed from a bucket (bucket feeding).
- Ensure the calf suckles the cow within the first eight hours to get colostrum.
- Feed the calf on colostrum for the first 4 days.
- Introduce the feeding of whole milk or milk substitutes after the fourth day.
- Feed the calf 2 - 3 times per day for the first 4 weeks.
- Feed the calf on the correct amount of milk upto weaning time.
- Provide adequate clean water from the third week.
- Feed the calf with warm milk at regular intervals.
- Introduce palatable dry feeds such as concentrates (calf pellets) and good quality cut grass from the third week.
- Provide mineral supplements or licks.
- Any change in feeding should be done gradually to avoid nutritional disorders.

(1 x 10 = 10 marks)

17.5 Paper 3 (443/3 –PROJECT)

The agriculture project paper is 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 school.

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 2010, candidates chose between preparation of compost manure and production of beans or onions. The agriculture teacher's duty was to objectively assess and evaluate each candidate's work at all the stages of project implementation.

17.6 GENERAL ADVICE TO TEACHERS

The whole syllabus should be effectively covered during instruction because examination items will be sampled from the entire syllabus.

The teacher/school should acquire the relevant reference materials and assist candidates to obtain and use the recommended textbooks.

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.

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.

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.