

## 6.0 SCIENCE

The KCPE Science Syllabus consists of concepts in Agriculture, Science, Home Science and Emerging issues like environment and HIV/AIDS. 2011 was the sixth time the Syllabus was being tested. The questions were sampled from all the topics in the syllabus with all cognitive skills tested.

### 6.1 GENERAL PERFORMANCE OF CANDIDATES

The table below gives a summary on the candidature, mean raw mark and standard deviation in Science for the years 2007, 2008, 2009, 2010 and 2011.

**Table 13: Performance of Candidates**

YEAR	2007	2008	2009	2010	2011
Number Sat	698,367	688,049	719,376	739,620	766,712
Mean Raw Mark	29.72	27.62	29.96	29.82	33.63
Standard Deviation	9.20	7.40	8.69	8.94	9.11

From the table, the year 2011 KCPE Science performance was the highest compared to the last four years (2010, 2009, 2008 and 2007). There was also an improvement in the standard deviation compared to the years 2010, 2009, 2008 and 2007. This is an indication that the paper fairly discriminated the different abilities of the candidates. The candidature increased by 3.66% in 2011 compared to a 2.74 % increase in 2010.

### 6.2 SYLLABUS COVERAGE

**Table 14: Syllabus coverage in the year 2011 KCPE Science**

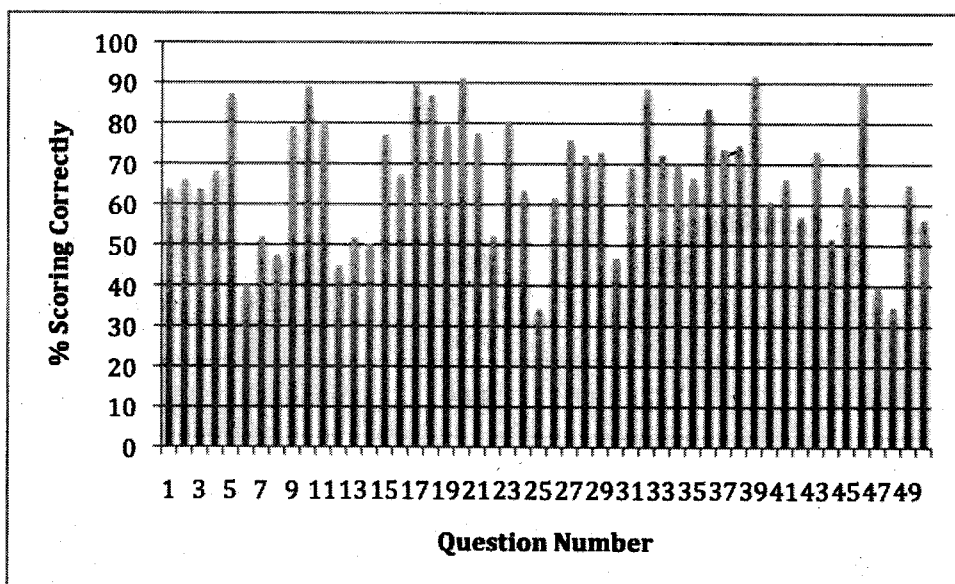
Sn	Topic	No. of Items	Percentage
1.0	Human Body	3	06
2.0	Health Education	3	06
3.0	Weather and Astronomy	3	06
4.0	Plants	5	10
5.0	Animals	5	10
6.0	Water	2	04
7.0	Making Work Easier	5	10
8.0	Properties of Matter	8	16
9.0	Energy	7	14
10.0	Food and Nutrition	3	06
11.0	Environment	3	06
12.0	Soil	3	06
<b>TOTAL</b>		<b>50</b>	<b>100</b>

The number of items per topic is determined by the number of lessons allocated to each topic in the Primary Science Spiral Syllabus. This remains the same for all the years unless there is a change in the syllabus.

### 6.3 ANALYSIS OF PERFORMANCE IN SCIENCE ITEMS

The Figure below shows the facility index of each of the 50 Questions offered in 2010 KCPE Science.

**Figure 6: Percentage of candidates scoring correctly.**



Any item scored by 30% and below of the candidates is considered as having been poorly performed. In the 2011 KCPE Science, no item had a facility index of 30% and below. For that reason Questions with facility index of 40% and below will be discussed. The Question numbers and the percentage of candidates choosing the correct response are shown in table 15 below.

**Table 15: Questions with a facility Index of 40% and Below**

Question Number	6	25	47	48
% of candidates choosing the correct response	39.53	34.28	39.72	34.71

#### Question 6

The first step in obtaining salt from a mixture of salt solution and pieces of copper wire is

- A. filtering
- B. winnowing
- C. using a magnet
- D. evaporating to dryness.

#### Response Patterns

Option	A*	B	C	D
% Choosing the option	39.53	3.65	35.40	20.66
Mean Mark in other Questions	37.76	26.07	30.78	32.79

In Standard 7, learners are expected to separate mixtures. The key to this question is A (filtering) which was chosen by the bright candidates as indicated by the Mean Mark in other Questions. Teachers should find innovative ways of teaching the content and when possible get the pupils to see and know how to separate different types of mixtures. Option C was chosen by a good number of candidates which suggests that some didn't know that copper is not a ferromagnetic material.

**Question 25**

Which one of the following statements is NOT TRUE about friction? Friction is a force that

- A. makes work difficult
- B. is reduced by treading tyres
- C. can be used to produce fire
- D. affects the speed of moving objects.

**Response Patterns**

Option	A	B*	C	D
% Choosing the option	38.83	34.28	9.89	16.15
Mean Mark in other Questions	32.04	39.22	28.06	30.16

The Question was from the topic Making Work Easier. The right option is **B** (is reduced by treading tyres), which was chosen by 34.28% of the candidates. These were also the bright candidates as indicated by their Mean Mark in other Questions. 0.75% of the candidates did not answer the Question and their Mean Mark in other Questions was the lowest at 9.62. These candidates seem not to have been well prepared for the examination.

**Question 47**

In which of the following cases is friction a disadvantage?

- A. Grinding maize.
- B. Writing.
- C. A bird flying.
- D. Braking.

**Response Patterns**

Option	A	B	C*	D
% Choosing the option	17.15	11.38	39.72	30.49
Mean Mark in other Questions	31.60	26.99	37.40	33.03

The Question was from the topic Making Work Easier. The right option is **C** ( a bird flying) which was chosen by 39.72% of the candidates. These were also the bright candidates as indicated by their Mean Mark in other Questions. 0.15% of the candidates did not answer the Question and their Mean Mark in other Questions is also the lowest at 15.81. This indicates that the candidates may not have been well prepared for the examination.

**Question 48**

Which one of the following is a source of electricity?

- A. Electromagnet.
- B. Bulb.
- C. Dynamo.
- D. Dam.

**Response Patterns**

Option	A	B	C*	D
<b>% Choosing the option</b>	9.40	15.21	34.71	39.49
<b>Mean Mark in other Questions</b>	28.35	28.53	36.71	34.66

The Question is from the topic Energy (Electricity) in Standard Seven. The candidates were tested on the sources of electricity. 34.71% of the candidates chose the right option and these were the bright candidates as indicated by their Mean Mark (36.71) in the other questions.

**6.4 GENERAL COMMENTS**

In 2011, KCPE Science was well done with a Mean raw mark of 33.83. Since no item had a facility index of 30% and below, it means that the items were fairly good for the candidates. The Mean raw mark for females was 31.99 compared to 27.83 in 2010. The one for males was 35.55 compared to 31.65 in 2010. Teachers should strive to bridge this gap by using approaches that motivate female pupils towards sciences at an early stage in learning. The gap should be adequately addressed so that it is not transferred to the next level in learning.