

## 7.0 SCIENCE

The KCPE Science Syllabus consists of concepts in Agriculture, Science, Home Science and Emerging issues like environment and HIV/AIDS. 2014 was the ninth time the Syllabus was being tested. The questions were sampled from all the topics in the syllabus and all cognitive levels were tested.

### 7.1 GENERAL PERFORMANCE OF CANDIDATES

The table below gives a summary on the candidature, mean raw mark and standard deviation in Science for the year 2014. The years 2009, 2010, 2011, 2012 and 2013 are also included for comparison.

*Table 15: Performance of Candidates*

YEAR	2009	2010	2011	2012	2013	2014
Number Sat	719,376	739,620	766,712	811,706	837,722	<b>879,361</b>
Mean Raw Mark	29.96	29.82	33.63	32.02	30.91	<b>33.00</b>
Standard Deviation	8.69	8.94	9.11	9.51	8.54	<b>9.37</b>

From the table, the year 2014 KCPE Science performance was higher compared to the year 2013. The performance is however comparable to that of the years 2011 and 2012 in terms of the mean raw mark and the standard deviation. This is an indication that the paper is comparable to those of the previous years. The high standard deviation is an indication that the test paper adequately discriminated learners of different abilities. The candidature increased by **4.97%** (837,722 candidates in 2013 to 879,361 candidates in 2014).

### 7.2 SYLLABUS COVERAGE

*Table 16: Syllabus coverage in the year 2014 KCPE Science*

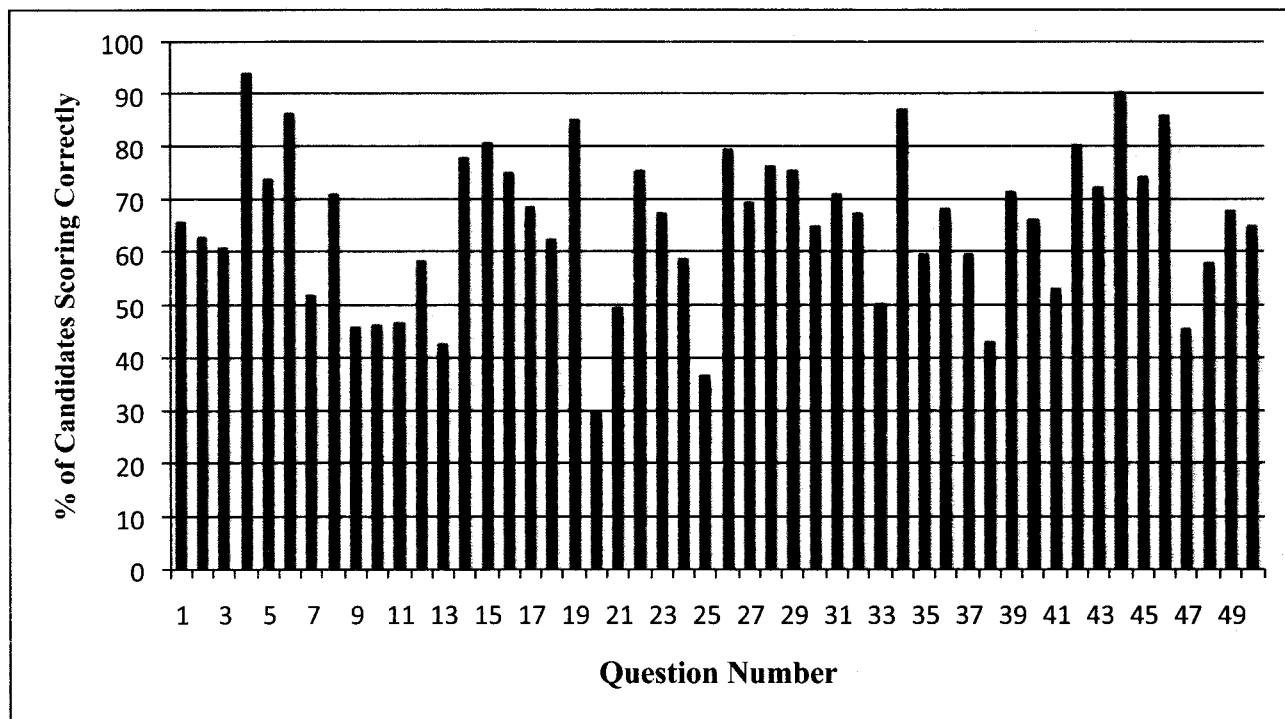
No.	Topic	No. of Items	Percentage
1.0	Human Body	3	06
2.0	Health Education	3	06
3.0	Weather and Astronomy	3	06
4.0	Plants	5	10
5.0	Animals	5	10
6.0	Water	2	04
7.0	Making Work Easier	6	12
8.0	Properties of Matter	8	16
9.0	Energy	7	14
10.0	Food and Nutrition	3	06
11.0	Environment	2	04
12.0	Soil	3	06
<b>TOTAL</b>		<b>50</b>	<b>100</b>

The number of items per topic is determined by the number of specific objectives allocated to each topic in the Primary Science Spiral Syllabus.

### 7.3 ANALYSIS OF PERFORMANCE IN SCIENCE ITEMS

The figure below shows the facility index of each of the 50 Questions offered in 2014 KCPE Science.

**Figure 9**



From the graph, seven items (4, 6, 19, 34, 42, 44 and 46) were popular to the candidates. More than 80% of the candidates scored correctly on these items. The popularity of the items could be attributed to adequate instruction by teachers or high difficult index of the items. These popular items combined well with a set of nine items which were scored correctly by less than 50% of the candidates.

Any item scored by 30% and below of the candidates is considered as having been poorly performed and hence unpopular to the candidates. In the 2014 KCPE Science, one item (20) had a facility index below 30%. This question and the percentage of candidates choosing the correct response is shown in the table below followed by a brief discussion on the response patterns.

**Table 17: Question with a facility Index below 30% and below**

<b>Question Number</b>	20
<b>% of candidates choosing the correct response</b>	29.41

### Question 20

Formation of a rainbow can be demonstrated by the following activities **except** when

- A. observing the sun through a horizontally-held transparent biro pen casing
- B. placing a mirror in water to face the sun
- C. spraying water in the air from the mouth in bright sunshine
- D. placing a biro pen casing on water in a glass container.

### Response Patterns

OPTION	A*	B	C	D	No Answer	SPOILT
% Choosing the option	29.41	7.55	12.77	48.89	1.34	0.04
Mean Mark in other Questions	33.05	26.96	27.38	35.48	28.73	27.66

Formation of a rainbow is taught in class six. The Learners are required to investigate refraction of light and demonstrate on making of a rainbow. Many candidates went for an incorrect response (option D), an indication that they did not understand the concept and requirements for rainbow formation. In particular, the candidates did not understand that for a rainbow to form, light must be dispersed by water droplets.

Instruction in schools should target the objective which clearly states that the candidates are required to investigate refraction of light and demonstrate the making of a rainbow. Performance on this item indicates that the objective may not have been adequately addressed during instruction.

### 7.4 GENERAL COMMENTS

In 2014, KCPE Science was well done with a Mean raw mark of 33.00. The Mean raw mark for females was 31.55 compared to 29.63 in 2013. The one for males was 34.44 compared to 32.14 in 2013. 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 of learning.