7.0 SCIENCE

The KCPE Science Syllabus consists of concepts in Science Agriculture, Home Science and Emerging issues like environment and HIV/AIDS. The 2019 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 2019. The years 2013, 2014, 2015, 2016, 2017 and 2018 are also included for comparison.

Table 19:   Performance of Candidates

YEAR	2013	2014	2015	2016	2017	2018	2019
Number Sat	837 722	879 361	927 111	931 863	993 509	1052198	1081557
Mean Raw Mark	30.91	33.00	27.74	30.91	27.8	29.48	28.48
Standard Deviation	8.54	9.39	8.44	9.34	8.27	8.98	9.17

From the table, the year 2019 KCPE Science performance dropped compared to 2018. The candidature increased by **2.7145 %** (1052198 candidates in 2018 to candidates 1081557 in 2019).

7.2 SYLLABUS COVERAGE

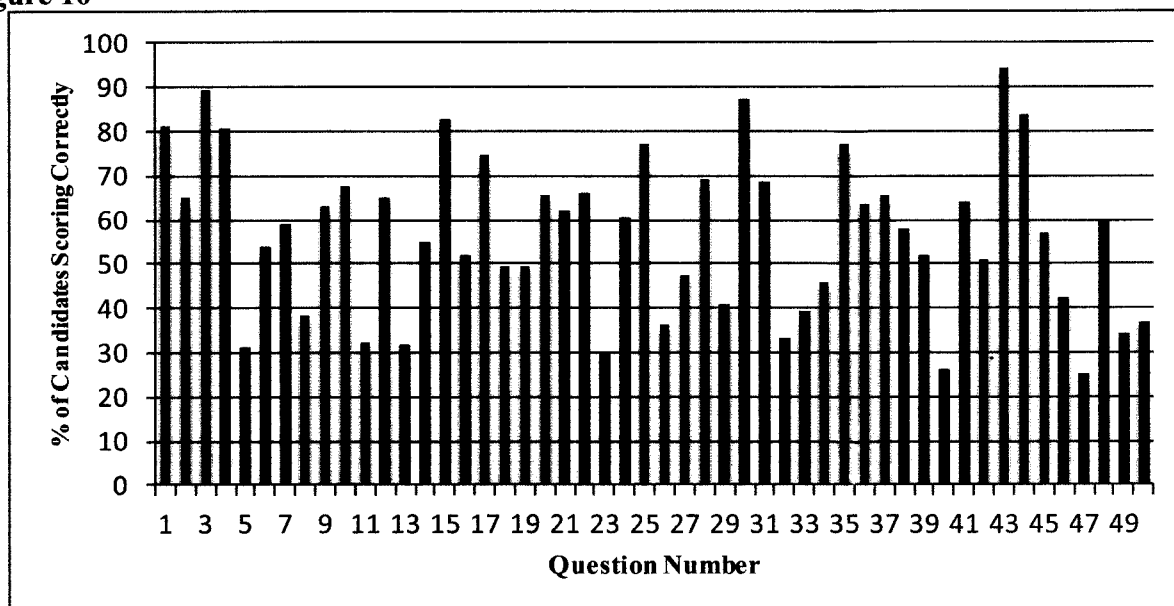*Table 20: Syllabus coverage in the year 2019 KCPE Science*

NO.	TOPIC	NO. OF ITEMS	PERCENTAGE
1.0	Human Body	5	10
2.0	Health Education	7	14
3.0	Weather and Astronomy	2	4
4.0	Plants	5	10
5.0	Animals	5	10
6.0	Water	4	8
7.0	Making Work Easier	3	6
8.0	Properties of Matter	3	6
9.0	Energy	8	16
10.0	Food and Nutrition	2	4
11.0	Environment	3	6
12.0	Soil	3	6
TOTAL		50	100

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 items offered in 2019 KCPE Science.

Figure 10

From the graph, six items (1, 3, 15, 30,43 and 44) were popular with 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 low difficult index of the items.

However, any item scored by 30% and below of the candidates is considered as having been poorly performed and hence unpopular with the candidates. In the 2019 KCPE Science, three items (23, 40 and 47) had a facility index below 30%. These items and the percentage of candidates choosing the correct response are shown in the table below followed by a brief discussion on the response patterns.

Table 21: Question with a facility Index below 30% and below

Question Number	23	40	47
% of candidates choosing the correct response	29.67	25.85	24.92

Question 23

The following machines make work easier by reducing the effort required **except**
  A. crowbar
  B. ramp
  C. flag post
  D. ladder.

Response Patterns

OPTION	A	B	C*	D
% Choosing the option	41.24	19.80	**29.67**	8.53
Mean Mark in other Questions	29.59	23.05	**31.19**	25.39

The item tested the candidate's knowledge on machines that make work easier by reducing the effort. The syllabus requires candidates to classify machines into inclined planes and single fixed pulley and its use. Option **A** attracted more candidates who could not identify a machine whose effort does not reduce to make work easier. However, the key was chosen by the bright candidates as indicated by their high mean in the rest of the items.

Question 40

Which one of the following weeds **cannot** be effectively controlled by uprooting?
- A. Mexican marigold.
- B. Oxalis.
- C. Wondering jew.
- D. Black jack.

Response Patterns

OPTION	A	B*	C	D
% Choosing the option	26.10	**25.85**	25.99	21.27
Mean Mark in other Questions	26.71	**27.99**	29.92	29.13

This item required candidates to understand that plants (weeds) with perenating organs cannot be controlled by uprooting. Distractor **A** attracted more candidates at 26.10 % given that candidates did not understand the concept of perenating organs. The key was avoided by the bright candidates indicating the difficulty index of the item at -0.06.

Question 47

Which one of the following does not conserve energy?
- A. Using a bicycle dynamo for lighting.
- B. Using an improved jiko for cooking.
- C. Using biogas for cooking.
- D. Planting trees.

Response Patterns

OPTION	A*	B	C	D
% Choosing the option	24.92	21.03	9.15	44.14
Mean Mark in other Questions	32.40	30.85	25.26	25.63

The item tested the candidate's knowledge on conservation of energy. Option **D** attracted more candidates who were not conversant with ways of conserving energy. However, the key was chosen by the bright candidates as indicated by their high mean in the rest of the items.

7.4 GENERAL COMMENTS
In 2019, the mean raw mark for girls was 27.83. The one for boys was 29.13. This means that the performance for boys improved as compared to that of the girls which stagnated.