3.2 GEOGRAPHY (312)

The year **2021 KCSE Geography** examination was presented in two papers: **paper 1 (312/1)** covers the **"Physical Geography and Map Reading"** while **paper 2 (312/2)** examines **"Human and Economic Geography, Photographic Interpretation skills and Statistics".** Each of the two papers had ten (10) questions.

This report analyses the performance of candidates in the year 2021 Geography examination papers, paying special attention to the poorly performed items. It looks at what the questions tested, the candidates' weaknesses and possible reasons for their poor performance. It also gives advice to Geography teachers with the aim of improving future performance in the subject.

3.2.1 General Candidates' Performance

The table below shows the overall performance in Geography over the period **2017** to **2021**

Table 8: candidates' overall performance in Geography for the last five years.

Year	Paper	Candidature	Maximum Score	Mean Score	Standard Deviation
2017	1	**156,057**	100	42.21	17.09
	2		100	47.33	18.03
	Overall		**200**	**89.36**	**33.69**
2018	1	**166,507**	100	37.85	18.16
	2		100	45.4	17.97
	Overall		**200**	**83.25**	**36.13**
2019	1	**179,843**	100	47	18.59
	2		100	46	17.088
	Overall		**200**	**93**	**35.637**
2020	1	**211,874**	100	47.39	19.57
	2		100	58.74	18.37
	Overall		**200**	**94.99**	**41.07**
2021	1	**246,191**	100	60.23	20.67
	2		100	50.71	16.91
	Overall		**200**	**108.05**	**36.84**

The following observations can be made from the table above:

(i) The candidature increased from **211,874** in2021 to **246,191** in 2021.

(ii) There was significant improvement in the overall performance of the subject from an overall mean of **94.99** in 2020 to **108.05** in 2021 The overall performance of the subject was good.

(iii) There was remarkable improvement in performance of Geography paper one **(312/1)** from a mean of **47.39** in 2020 **to 60.23** in 2021.

(iv) The performance of Geography paper two **(312/2)** registered a drop in performance from **58.74** in 2020 to **50.71** in 2021.

(v) The standard deviation in both papers, **20.67** in **312/1** and **16.91** in 312/2, shows a reasonable spread of candidates' scores from the mean.

Despite the improved performance, some questions were performed poorly by some students, and they will be discussed in the section below.

3.2.2 Geography Paper 1 (312/1)

The performance of candidates in this paper improved from a mean of 47.39 in 2020 to 60.23 in 2021. The paper adequately tested the syllabus, and the questions were well balanced. This report will look at questions that registered poor performance, identify areas of weakness, the expected responses and general advice to teachers in order to improve performance.

The questions that were performed poorly are: Q 3b,4b, 5b, 7b (i), c (iii) 9b (ii)

Requirement Q 3b)

Give three characteristics of the SIMA layer

Weaknesses.
Many candidates had difficulties differentiating the characteristics of SIMA from other layers of internal structure of the earth, hence giving wrong responses.

Expected responses
- It forms the bulk of the oceanic floor.
- It underlies the continental crust.
- It has rocks which are mainly basaltic.
- The most common minerals are silica, magnesium, and iron.
- The average density is between 2.8 – 3.0 g/cc.
- Temperature is about 400°C
- Rocks are plastic like/flexible
- It is 6-10km thick

Advice to teachers
Teachers need to clearly bring out the characteristics of the layers of the internal structure of the earth in reference to the thickness, range of temperatures and density for each of the layers. Teachers should engage the candidates in indepth discussions on characteristics of each layer for better understanding.

Requirement Q 4(b)

List three erosional features found in glaciated lowlands.

Weaknesses
Most candidates were not able to differentiate glaciated features of the lowlands from those of the highlands

Expected responses.

- Depressions.
- Roche moutonnee.
- Crag and tail.
- Ice eroded plains

Advice to teachers

There is need for teachers to clearly differentiate features found in the lowlands from those of the highlands. Teachers may use video clips to show the features for easier distinction

Requirement Q 5(b)

State three ways in which humus contributes to the quality of soil.

Weaknesses

Some students stated the contribution of humus to plant growth than to the quality of soil.

Expected responses

- By retaining of moisture.
- By facilitating the aeration of the soil.
- By improving the soil texture.
- By providing mineral matter in soil.
- By providing food for micro- organisms in the soil.
- By binding soil particles together/improves soil structure.

Advice to teachers

When teaching this topic there is need for teachers to clearly distinguish the role of humus in plant growth from the contribution to the quality of soil.

Requirement Q 7(bi)

What is the local time at Kinshasa 15°E when local time at Malindi 40°E is 12.00 noon?

Weaknesses

Most candidates were not able to calculate the time correctly as they seemed to have difficulties knowing if Kinshasa was to the west or east of Malindi hence added to the time difference instead of subtracting.

Advice to teachers

Teachers are encouraged to guide students in taking frequent exercises on calculating time of different towns in varied longitudinal locations. The use of globe/world map would be highly useful in illustrating the effect of rotation on time difference on earth.

Requirement Q 7c (iii)

Explain why the interior of the earth is hot.

Weaknesses

Many candidates gave the reasons why the interior of the earth is hot, yet they were required to give an explanation.

Expected responses

- After materials broke away from the sun the planet earth started cooling. The interior of the earth cooled at a lower rate.
- The weight of the overlying materials exerts great pressure that generates a lot of heat making the interior hot.
- Nuclear fission in the interior of the earth releases a lot of heat which is retained/radioactivity

Advice to teachers

Teachers should encourage candidates to read and understand questions well before answering them. There is need to clearly define the terms outlined in the syllabus as this makes it easy for the students to answer related questions exhaustively.

Requirement Q 9 (bii)

Describe how the following Karst scenery features are formed.

I Stalagmite

II Polje

Weaknesses

Some students were not able to distinguish stalagmite from stalactite hence ended up giving the wrong response

Expected responses

- Rainwater absorbs carbon iv oxide to form weak carbonic acid.
- Water percolates through the joints in the rocks on the roof of a limestone cave.
- The limestone rock is dissolved in water to form calcium bicarbonate solution.
- The solution drops slowly from the roof of the cave to the floor.
- On the floor the solution spreads out and water evaporates leaving crystals of calcium bicarbonate.
- As more solution falls on the floor and water evaporates more crystals are formed.
- The accumulated crystals form a column of limestone rising towards the roof of the cave known as Stalagmite.

Advice to teachers

When teaching these features, the teachers need to exhaustively discuss the unique differences between stalagmites and stalactites. Use of diagrams/video clips to illustrate this will enable learners to have in-depth understanding of the features.

3.2.3 Geography Paper 2 (312/2)

The performance of candidates in this paper registered a drop from a mean of 58.74 in 2020 to **50.71** in 2021. This report looks at question 1 a, 2b and 7d and 8b (ii) which presented some challenges in the way some candidates answered them.

Requirement Q 1 (a)

State **two** climatic conditions favouring coffee growing in the Kenya highlands.

Weakness.

Some candidates dwelt on human and economic factors whereas the question required climatic conditions favouring coffee growing hence ended up with incorrect responses.

Expected responses

- High rainfall/1000-2000mm/well distributed rainfall throughout the year.
- Moderate/high temperature/14-30°C
- Shelter from direct sunlight
- Requires two months dry period for flowering.

– Cool/warm/hot conditions.
– Frost free conditions.

Advice to teachers.
Teachers need to exhaustively discuss in detail the differences between physical, human, and economic factors and how climatic factors influence coffee growing in the Kenya highlands. Students should be regularly engaged in group discussions on these factors as this will allow for better understanding of the differences.

Requirement Q 2(b)

State **three** physical factors that influenced the location of Perkerra irrigation Scheme.

Weaknesses.
Most candidates confused Pekerra with Mwea Tebere irrigation scheme in giving examples of rivers. Some candidates' responses were too general, yet this is a case study.

Expected responses.
- Presence of soils rich in minerals nutrients/clay/loamy soils
- Availability of large tracks of land.
- Availability of water from Pekerra river
- Presence of gentle sloping land/undulating land
- Inadequate rainfall//semi-arid/dry conditions

Advice to teachers
Teachers should encourage candidates to read and understand questions well before answering them. There is need to for in depth coverage of case studies cited in the syllabus and emphasize the specific details for each as this makes it easy for the students to answer related questions exhaustively.

Requirement for Q 7 (d)

Describe the differences between horticulture farming in Kenya and Netherlands

Weaknesses:
Many candidates gave negative responses instead of clearly stating the differences therefore ended up giving incorrect responses.

Expected responses
– In Netherlands, there is more advanced technology used to enhance horticulture while in Kenya the technology is low
– In Netherlands there is well developed transport system which facilitates movement of horticultural produce while in Kenya transport networks are less well developed
– In Netherlands there is highly skilled manpower while in Kenya there is low skilled manpower.
– In Netherlands farmers have more access to capital while in Kenya they have limited access to capital
– Netherlands has well organized marketing strategies while in Kenya marketing is poorly coordinated
– In Netherlands horticulture farming enjoys more advanced research while in Kenya research in horticulture is low.
– Netherlands horticultural crops are in high demand both locally and internationally while in Kenya the local demand is low.

Advise to teachers.

It is important to clearly bring out the differences in horticultural farming in Kenya and Netherlands while teaching this case study. Debates and discussions on this can be held after the topic is covered for the students to have in depth understanding. Teachers can make learning of this topic more practical by organizing field trips to horticultural farms, watch videos on horticultural farming in Netherlands in order bring the global experience to the learners

Requirement Q8(bii)

Explain four physical factors that favoured the development of the Seven Forks hydro-electric power projects.

Weaknesses

Some students cited economic factors that favoured the development of the Seven forks hydro-electric power projects whereas the question required an explanation of physical factors. Some candidate's responses were only stated yet an explanation was required.

Expected responses

- Presence of large volume of water from River Tana and its tributaries to provide water to drive the turbines.
- Regular/constant flow of River Tana which enabled continuous production of electricity
- Presence of hard basement rock along the site which provided a firm foundation for the dams
- Availability of enough space for construction of dams/reservoirs due to low population in the area.
- Presence of waterfalls/rapids/steep gradient which provided sufficient hydraulic force to turn the turbines
- Presence of impervious rock which prevents seepage of water underground
- Presence of a gorge/deep valley which reduced the cost in construction of dam.

Advice to teachers:

Teachers need to encourage students to take note of the key requirements of each question before attempting them.

3.2.4 GENERAL COMMENTS

i. Teachers should comprehensively cover the syllabus within the time allocated, marked by in-depth teaching of terms and concepts. The comparative studies outlined in the syllabus should be emphasized using approved revision books/Case Studies/ Field work.

ii. Teachers should effectively assess on the syllabus topics and desist from using unapproved revision examinations; they can use the KNEC past papers or teacher made tests. They should train candidates on approaches to answer questions to avoid using a generalised approach.

iii. The teachers should train their students to use the rubric (instructions to candidates) and follow it during examinations. They should learn to thoroughly read and understand the requirement of each question before answering.

iv. Teachers should sensitize their learners on how to tackle application questions.

v. The teachers should expose students to discussions and debates and use of teaching and learning aids like videos, maps, charts, and atlases in geography lessons for the learners to understand the concepts better. The resources used by teachers should be carefully chosen.

vi. Students should be exposed to varied topographical maps, photographs, and statistical data for frequent practice on map reading, photographic interpretation, statistical data calculation and interpretation to enhance acquiring of different skills.

vii. Field excursions /study should be encouraged for better understanding of taught concepts.

viii. Candidates should be encouraged to do in depth revision and reading on the topics covered in the syllabus using the relevant diagrams. Rote learning should be discouraged.

ix. There is need for in-service for geography teachers on how to manage the syllabus and guidance by the quality and standards subject officers in the department of education at the county levels.

x. County subject specialists' seminars /workshops should be held on annual basis to brainstorm on the best approach to improve subject performance.