EXAMINATIONS COUNCIL OF ZAMBIA

2022 School Certificate Examination Performance Review Report

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Foreword

The School Certificate Examination marks a significant milestone for learners in their academic journey. This examination marks the end of secondary education and a bridge to tertiary education. In addition, it provides system level feedback on learning achievement, valuable in improving teaching and learning processes. It is for this reason that the Examinations Council of Zambia (ECZ) develops performance review reports at the end of each examination cycle, that provides feedback and in-depth analysis of learning achievement. The reports provide essential information, both at policy making and implementation levels on which learning achievement decisions could be made. Additionally, the report serves as a vital resource for research and development, benchmarking, and cross-country comparisons on learning achievement.

This report provides a comprehensive overview of the accomplishments, strengths, weaknesses, trends, and challenges of candidates who sat the 2022 School Certificate Examination. In addition, the report highlights best practices, gaps and areas for improvement in teaching and learning processes. It is my hope that this report will add value to the system, that would translate into improvement in learner achievement levels.

Dr. Michael Chilala
Executive Director
Examination Council of Zambia

Acknowledgements

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The ECZ expresses its sincere appreciation to all those who assisted in preparing this report, and special recognition is deserved by the officers listed below for their extensive experience, knowledge, and expertise in producing and publishing this report:

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Contents

1.0 Introduction

This report focuses on the results of the 2022 Grade 12 School Certificate Ordinary Level Examination, which is divided into two main parts. The first part presents an overview of the examination results, while the second part provides a detailed analysis of the performance in each subject.

The highlights of the examination results provide information on various aspects of performance, including candidature, absenteeism, certificate division, gender, age, and school type. Additionally, the report includes statistical data on candidates with Special Educational Needs (SEN).

The analysis of subject-specific performance focused on identifying the strengths and weaknesses exhibited by candidates in each subject. To facilitate the analysis, the 32 subjects were classified into the following subject clusters:

i. Literature and Languages

ii. Social Sciences

iii. Business Studies

iv. Mathematics and Science Subjects (Natural Sciences)

v. Practical Subjects

2.0 Examination Results Highlights

2.1 Candidature

2.1.1. In 2022, there was a 2.57 percent increase in the number of candidates who registered for the School Certificate examination, with a total of 127,219 candidates registering compared to 124,031 candidates in 2021.

2.1.2. In the 2022 School Certificate examination, 64,362 boys (50.59%) and 62,857 girls (49.41%) registered, representing a 2.83 percent increase for boys and a 2.31 percent increase for girls from the previous year's figures.

2.1.3. Out of the 127,219 registered candidates in 2022, 125,075 (98.31%) sat the examination, which is a slight increase of 0.05 percentage points from the 2021 figures.

2.1.4. Of the candidates who sat the 2022 examination, 63,251 boys (98.27%) and 61,824 girls (98.36%) took it. When compared to the previous year, there was a 0.2 percentage point increase in the proportion of boys who took the exam, while the proportion of girls slightly decreased by 0.09 percentage points.

Table 1:Candidate Entry for 2019 to 2022

Year	**Boys**	**Girls**	**Total**
2022	64,362	62,857	127,219
2021	62,593	61,438	124,031
2020	77,955	72,027	149,982
2019	72,733	64,767	137,500
Δ 2021 to 2022 (Absolute figures)	1,769	1,419	3,188
Δ in Percentage	2.83	2.31	2.57

2.2. Absenteeism

2.2.1. The absenteeism rate has seen a steady decrease over the years, with a recorded rate of 1.69 percent in 2022, which is 0.05 percentage points lower than the 1.74 percent recorded in 2021.

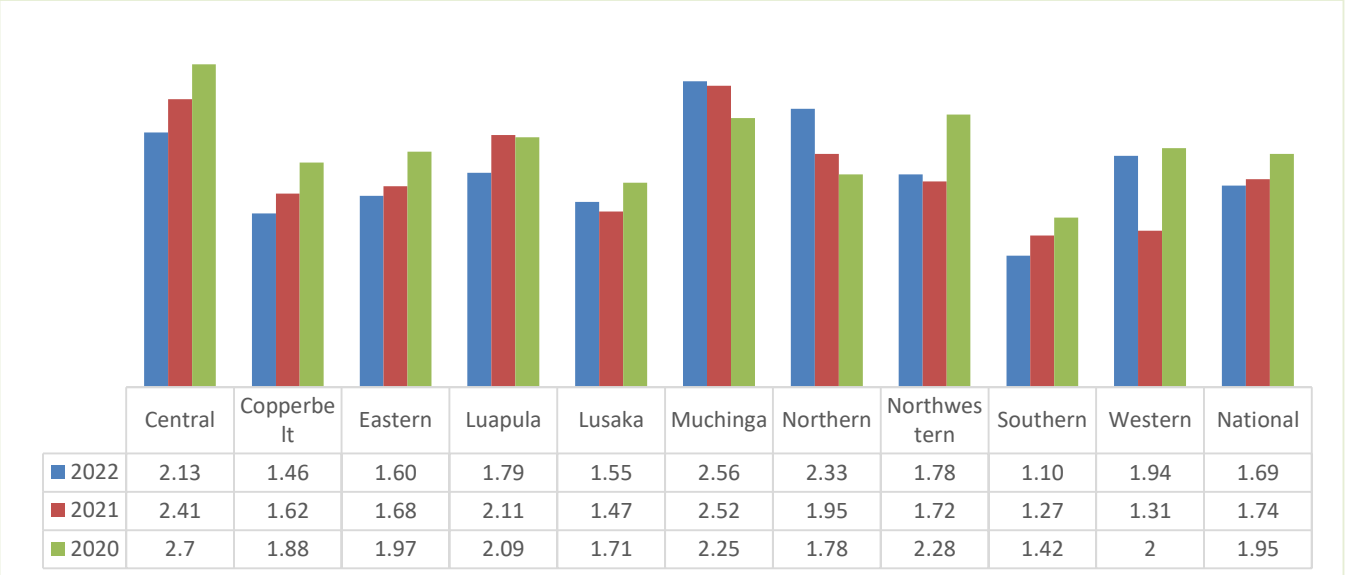
2.2.2. Boys had a higher absenteeism rate than girls, with a rate of 1.73 percent compared to 1.64 percent for girls in 2022. This trend was also observed in the 2021 examination. However, in 2022, the absenteeism rate for boys decreased while that of girls increased, with a respective rise of 0.20 and 0.09 percentage points.

Table 2: Grade 12 Candidate Absenteeism Rates for 2019 to 2022

Year	**Boys**		**Girls**		**Total**	
	Absolute	Proportion	Absolute	Proportion	Absolute	Proportion
2022	1111	1.73	1033	1.64	2144	1.69
2021	1208	1.93	952	1.55	2160	1.74
2020	1631	2.09	1296	1.8	2927	1.95
2019	1443	1.98	1234	1.91	2677	1.95
Δ 2021 to 2022	-97	-0.20	81	0.09	-16	-0.05

2.2.3. Four provinces (Southern, Copperbelt, Lusaka, and Eastern) recorded absenteeism rates that were lower than the national rate of 1.69 percent, with Southern province recording the lowest rate at 1.10 percent. The remaining provinces had absenteeism rates higher than the national rate, with Muchinga province having the highest rate at 2.56 percent.

2.2.4. Copperbelt, Lusaka, and Southern provinces have consistently maintained absenteeism rates below the national rate for three consecutive years. Please refer to figure 1 for further details.



	Central	Copperbelt	Eastern	Luapula	Lusaka	Muchinga	Northern	Northwestern	Southern	Western	National
2022	2.13	1.46	1.60	1.79	1.55	2.56	2.33	1.78	1.10	1.94	1.69
2021	2.41	1.62	1.68	2.11	1.47	2.52	1.95	1.72	1.27	1.31	1.74
2020	2.7	1.88	1.97	2.09	1.71	2.25	1.78	2.28	1.42	2	1.95

Figure 1: Absenteeism rate for 2020 to 2022

2.3. General Performance

2.3.1. Classification of Certificate Awards

The School Certificate Examination Ordinary Level Certificate awards are classified into three categories: School Certificate, General Certificate of Education, and Fail.

i. A School Certificate (SC) is awarded to a candidate who, at one sitting, and during the same examination:
   a. Passes in at least six subjects, including English Language, with credit in at least one of them; or
   b. Passes in five subjects, including English Language, with credit in at least two of them.

ii. A candidate who obtains GRADE ONE TO EIGHT in at least one subject, but fails to meet the School Certificate requirements, is awarded a Statement of results.

iii. A candidate who scores Grade 9 in all subjects will have failed the examination.

2.3.2. School Certificate Pass Rate

i. Out of the 125,075 candidates that sat the examination, 86,662 (69.29%) obtained School Certificates. This represents an increase of 2.14 percentage points from 2021, which is consistent with the trend observed in the previous

year's examination. The reason for this improvement may be due to a reduced reliance on possible leakages of examination question papers.

ii. The proportion of boys (69.31%) and girls (69.27%) who obtained School Certificates was almost identical, with only a small difference of 0.04 percentage points in favor of boys.

iii. Compared to 2021, the percentage of candidates who obtained School Certificates increased by nearly 2 percentage points (boys: 1.77%, girls: 2.51%).

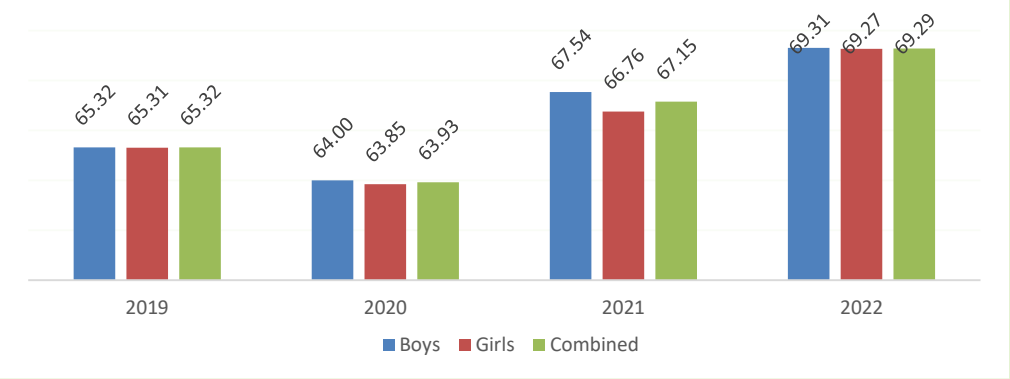


Figure 2: Candidates obtaining School Certificates (%) by Sex (2019 to 2022)

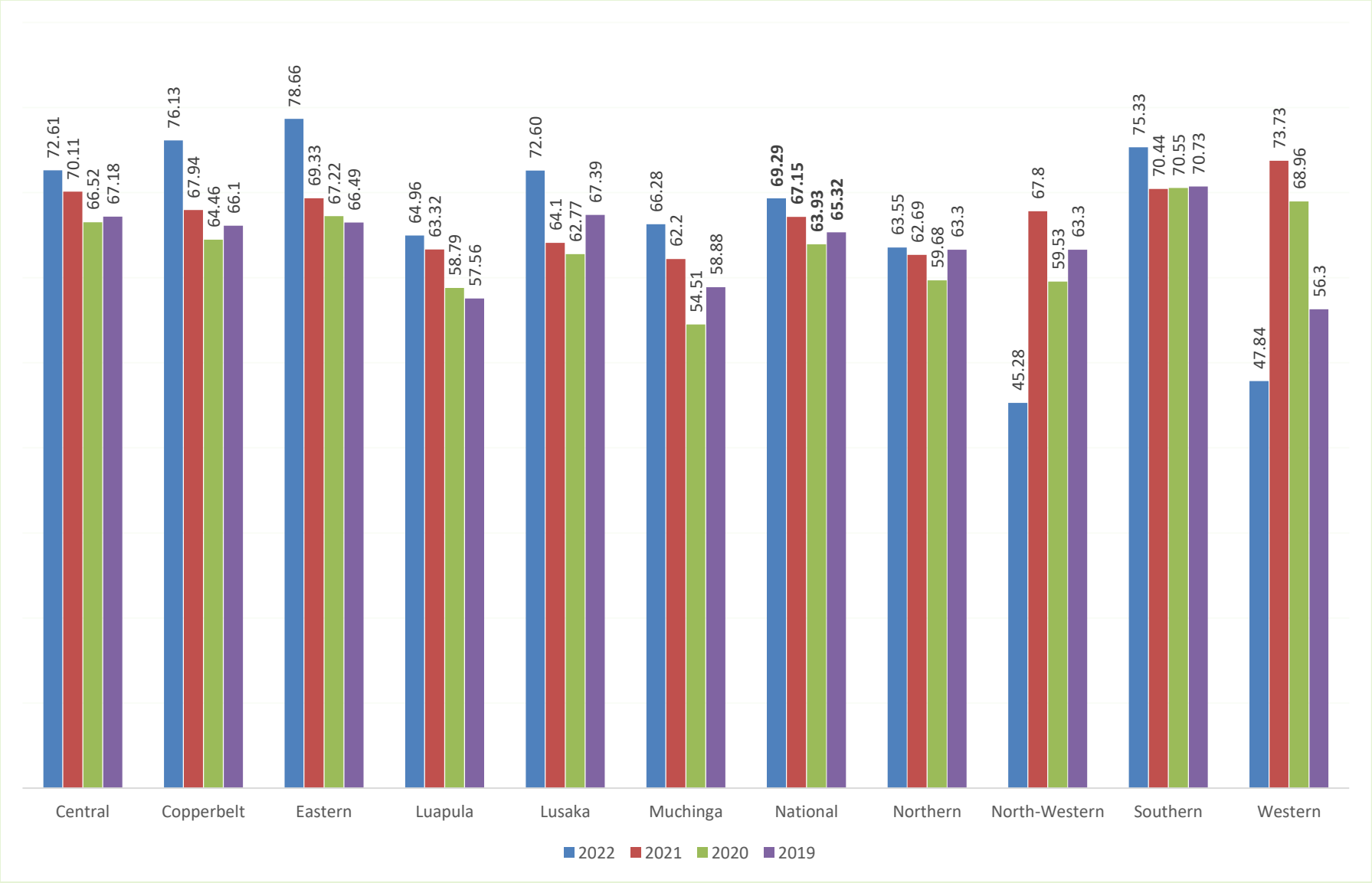


Figure 3: Proportion of Candidates obtaining School Certificates (2019 – 2022)

iv. The analysis of provincial pass rates for the School Certificate shows that all provinces except North-Western and Western recorded an increase in the percentage of candidates who obtained the certificate, see table 3.

v. Eastern province had the highest percentage of candidates obtaining School Certificates, at 78.66 percent, while North-Western had the lowest at 45.28 percent.

vi. A significant decline in the percentage of candidates earning School Certificates was observed in North-Western and Western provinces, with drops of 22.52 percent and 25.89 percent, respectively. This decline is worrisome, given that these provinces have performed well in recent years.

vii. Of the five provinces with percentages of School Certificate recipients below the national average of 69.29%, four are Muchinga (66.28%), Luapula (64.96%), Northern (63.55%), Western (47.84%), and North-Western (45.28%).

Table 3: Change in proportions of Candidates obtaining School Certificates

Region	**2022**	**2021**	**Change**
Eastern	78.66	69.33	9.33
Copperbelt	76.13	67.94	8.19
Southern	75.33	70.44	4.89
Central	72.61	70.11	2.50
Lusaka	72.60	64.1	8.50
National	69.29	67.15	2.14
Muchinga	66.28	62.2	4.08
Luapula	64.96	63.32	1.64
Northern	63.55	62.69	0.86
Western	**47.84**	**73.73**	**-25.89**
North-western	**45.28**	**67.8**	**-22.52**

2.3.3. School Certificate Pass Rates Across Regions

i. The proportion of candidates obtaining a School Certificate varied by province, with the Eastern province having the highest rate at 78.66 percent, followed by the Copperbelt province at 76.13 percent. In contrast, the Western and North-western provinces had the lowest pass rates at 47.84 percent and 45.28 percent respectively.

ii. Regarding performance improvement from 2022, all provinces except Western and North-western demonstrated improvement. Eastern, Lusaka, and Copperbelt provinces showed the most significant increases in percentage points, with 9.33 percent, 8.50 percent, and 8.19 percent, respectively, from 2021. Western and North-western provinces experienced a pass rate decrease of over 20 percentage points in 2022.

Table 4:Provincial Ranking According to School Certificate Pass Rate (2022, 2021, 2020 & 2019)

PROVINCE	2022		2021		2020		2019	
	SC (%)	Position	SC (%)	Position	SC (%)	Position	SC (%)	Position
Eastern	78.66	1	69.33	4	67.22	3	66.49	2
Copperbelt	76.13	2	67.94	5	64.46	5	66.1	6
Southern	75.33	3	70.44	2	70.55	1	70.73	3
Central	72.61	4	70.11	3	66.52	4	67.18	1
Lusaka	72.60	5	64.1	7	62.77	6	67.39	4
Muchinga	66.28	6	62.2	10	54.51	10	58.88	8
Luapula	64.96	7	63.32	8	58.79	9	57.56	7
Northern	63.55	8	62.69	9	59.68	7	63.3	5
Western	**47.84**	**9**	**73.73**	**1**	**68.96**	**2**	**56.3**	**10**
North-western	**45.28**	**10**	**67.8**	**6**	**59.53**	**8**	**63.3**	**9**

2.3.4. Statement – Internal Candidates

i. Beginning with the 2021 examination session, a candidate who obtains Grade **One** to **Eight** in at least one subject but fails to meet the School Certificate requirements is awarded a Statement.

ii. The percentage of candidates receiving a Statement decreased by 2.70 points from 31.11 percent in 2021 to 28.41 percent in 2022, a pattern that was also seen in 2021.

iii. Due to a decrease in the proportion of candidates who obtained a School Certificate, the North-Western and Western provinces experienced a significant increase in the proportion of candidates who obtained a Statement. This increase was by 18.48 and 20.19 percentage points respectively from 2021.

iv. More girls (28.55%) obtained Statements than boys (28.31%), a trend observed in the last two years.

Table 5: Proportion of Candidates Obtaining a Statement (2020 – 2022)

Province	**2022**			**2021**			**2020**			**Change from 2021**	
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total		
National	**28.31**	**28.55**	**28.43**	**30.5**	**31.72**	**31.11**	**32.95**	**33.77**	**33.34**	**-2.68**	**Reduced**
Central	25.19	25.41	25.30	27.36	28.89	28.11	30.39	31.25	30.8	-2.81	Reduced
Copperbelt	23.41	21.67	22.49	30.32	30.3	30.31	32.62	32.71	32.66	-7.82	Reduced
Eastern	21.01	20.25	20.67	29.05	30.48	29.69	31.21	31.98	31.54	-9.02	Reduced
Luapula	30.76	34.62	32.40	31.99	36.03	33.74	34.8	42.63	38.16	-1.34	Reduced
Lusaka	26.08	26.36	26.22	33.5	35.18	34.37	33.9	34.94	34.43	-8.15	Reduced
Muchinga	30.28	29.22	29.81	34.26	34.58	34.4	41.82	40.97	41.46	-4.59	Reduced
Northern	32.68	34.36	33.39	33.84	36.87	35.12	36.1	36.56	36.29	-1.73	Reduced
North-western	**48.71**	**48.08**	**48.40**	**30.56**	**29.26**	**29.92**	**37.01**	**36.87**	**36.95**	**18.48**	**Increased**
Southern	23.06	24.37	23.72	27.16	29.9	28.55	27.32	28.74	27.99	-4.83	Reduced
Western	**41.94**	**48.05**	**45.14**	**24.03**	**25.8**	**24.95**	**28.53**	**28.99**	**28.76**	**20.19**	**Increased**

2.4. Performance by Subject Mean Scores

To compare the performance of different subjects, the raw mean scores were converted to percent mean scores. In 2022, the mean percentage scores ranged from 27.51 percent in Mathematics to 70.0 percent in Food and Nutrition. This range differed from that of 2021, where the mean percentage scores varied from 23.91 percent in Mathematics to 66.22 percent in Design & Technology.

2.4.1. Food and Nutrition recorded the highest score at 70.0 percent, followed by Design and Technology at 66.42 percent, and French at 66.36 percent. The range of highest mean percentages in 2022 increased compared to 2021.

2.4.2. In 2022, Mathematics, Science, and History had the lowest mean percentages at 27.51 percent, 29.81 percent, and 34.24 percent, respectively. These results were somewhat consistent with those from 2021, where Mathematics had the lowest mean percentage at 27.51 percent, followed by Biology with 26.72 percent.

2.4.3. In the Natural Sciences subjects, all subjects showed an improvement in performance compared to the 2021 examinations. Biology showed the most significant increase, with 10.9 percentage points, followed by Additional Mathematics with 7.58 percentage points. Physics showed the least increase, with 1.04 percentage points.

2.4.4. The performance in Literature and Languages subjects showed a general decrease in 2022, with five out of ten subjects recording a decrease in percentage points compared to 2021. The most significant decrease was observed in Lunda with a 13.44 percentage point drop, followed by Luvale with a 9.18 percentage point decrease and Silozi with a 4.66 percentage point decrease. However, Literature in English showed the highest increase with 9.97 percentage points, followed by Icibemba with 5.95 percentage points.

2.4.5. Regarding Social Sciences, four out of five subjects recorded an increase in percentage mean score in 2022. The highest increase was in Religious Education (2044), with an 8.07 percentage point rise, followed by Civic Education with 6.55 percentage points and History with 4.08 percentage points.

However, compared to 2021, there was a reduction in the number of subjects that recorded an increase in percentage points.

2.4.6. Both subjects in Business Studies showed an increase in percentage mean score in 2022. The highest increase was observed in Principles of Accounts.

2.4.7. In the Practical Subjects category, all seven subjects showed improvement in percentage point scores in 2022, compared to five out of seven subjects in 2021. Food and Nutrition had the highest increase, with 12.0 percentage points, followed by Musical Arts with 2.45 percentage points, and Fashion and Fabrics with 1.02 percentage points. On the other hand, Design and Technology recorded the least improvement with an increase of only 0.2 percentage points.

2.4.8. Overall, Mathematics recorded the lowest performance, with a percentage mean score of 27.51 percent, while Food and Nutrition recorded the highest at 70.0 percent. The percentage mean scores for Practical subjects in 2022 were all above the natural pass mark of forty percent (40%), similar to 2021 (See Figure 4 and 5).

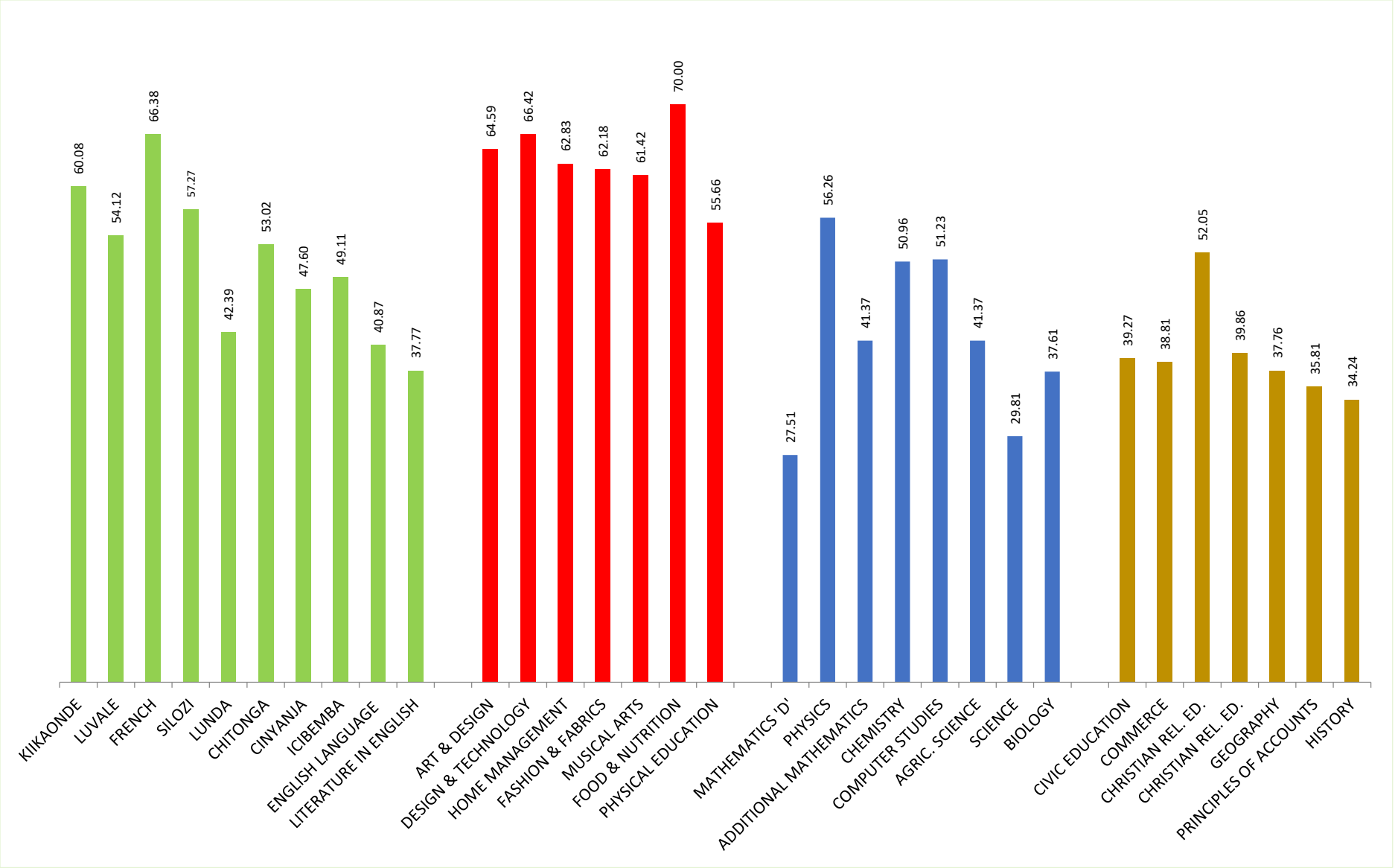


Figure 4: 2022 Means Scores (%) in all Subjects.

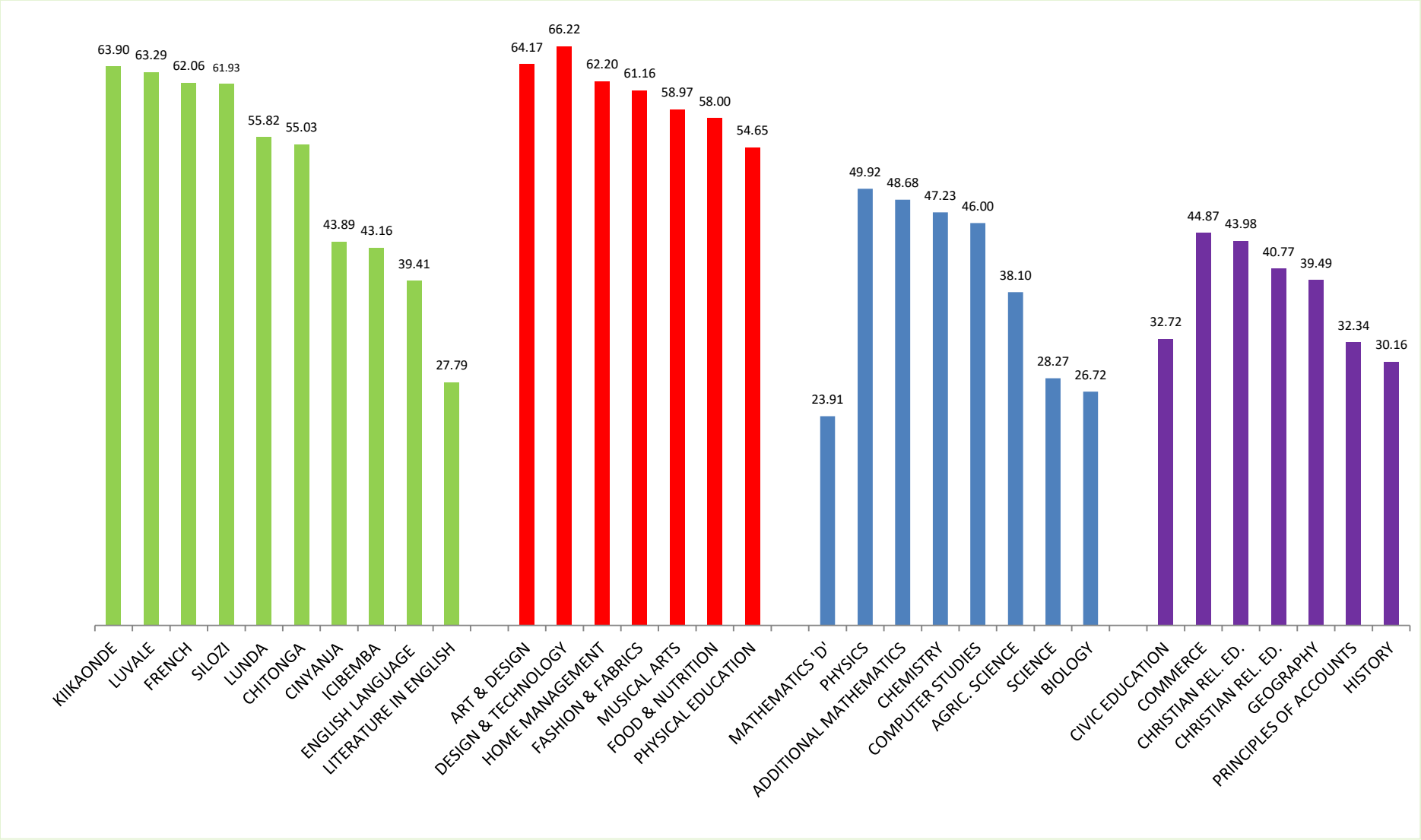


Figure 5: 2021Means Scores (%) in all Subjects

2.4.9. Performance in Practical Subjects by Gender and by region.

i. In Musical Arts Education, Design and Technology, and Physical Education, boys had higher mean scores than girls, with scores of 57.67 percent, 65.50 percent, and 54.91 percent, respectively.

ii. Girls outperformed boys in Art and Design, Fashion and Fabrics, Food and Nutrition, and Home Management, with mean scores of 64.02 percent, 62.02 percent, 70.55 percent, and 63.35 percent, respectively.

iii. In Practical Subjects, the performance of boys and girls in 2022 was similar to that of 2021 and 2020, with boys showing strength in Design & Technology, Musical Arts Education, and Physical Education, while girls exhibited strength in Fashion and Fabrics, Home Management, and Food and Nutrition. Figure 7 summarizes the performance by sex in Practical Subjects.

iv. Central Province had the highest pass rate in Musical Arts Education, with 65.48 percent of candidates passing the examination. In contrast, Lusaka Province had the lowest pass rate in the same subject, with only 55.08 percent of candidates passing.

v. Southern Province had the highest pass rate in Arts and Design, with 67.35 percent of candidates passing, while Northern Province had the lowest pass rate in the same subject, with 59.19 percent of candidates passing.

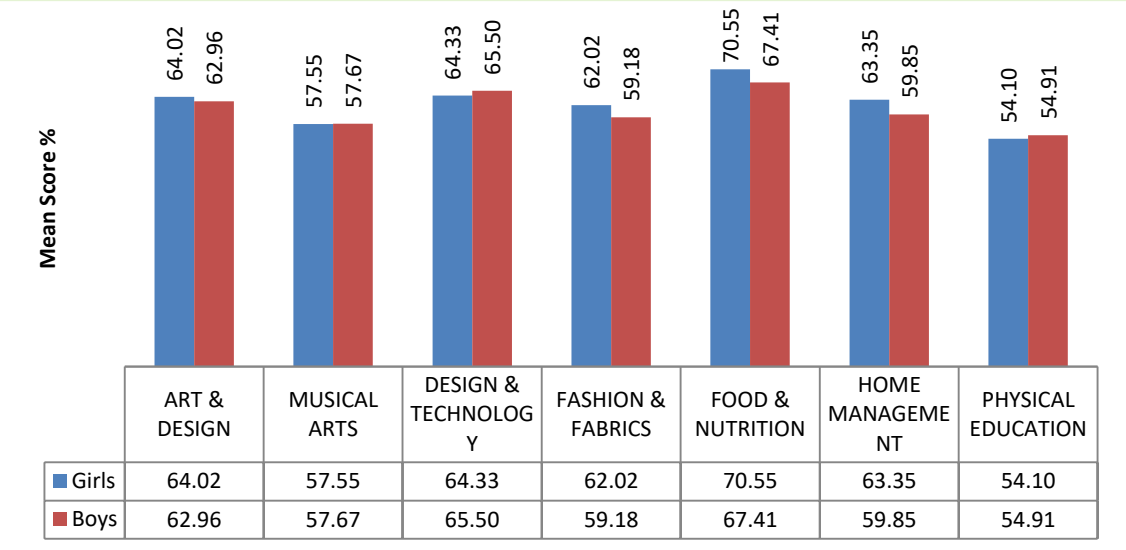
vi. In Design and Technology, Copperbelt Province had the highest pass rate, with 69.05 percent of candidates passing, and Western Province had the lowest pass rate, with 57.33 percent of candidates passing.

vii. For Fashion and Fabrics, Copperbelt Province had the highest pass rate at 66.11 percent, and Western Province had the lowest pass rate in the same subject, with 53.99 percent of candidates passing. Similarly, in Food and Nutrition, Copperbelt Province had the highest pass rate at 71.19 percent, while Western Province had the lowest pass rate, with only 64.55 percent of candidates passing.

viii. Copperbelt Province also had the highest pass rate in Home Management, with 65.34 percent of candidates passing, while Western Province had the lowest pass rate, with 58.26 percent of candidates passing. Copperbelt

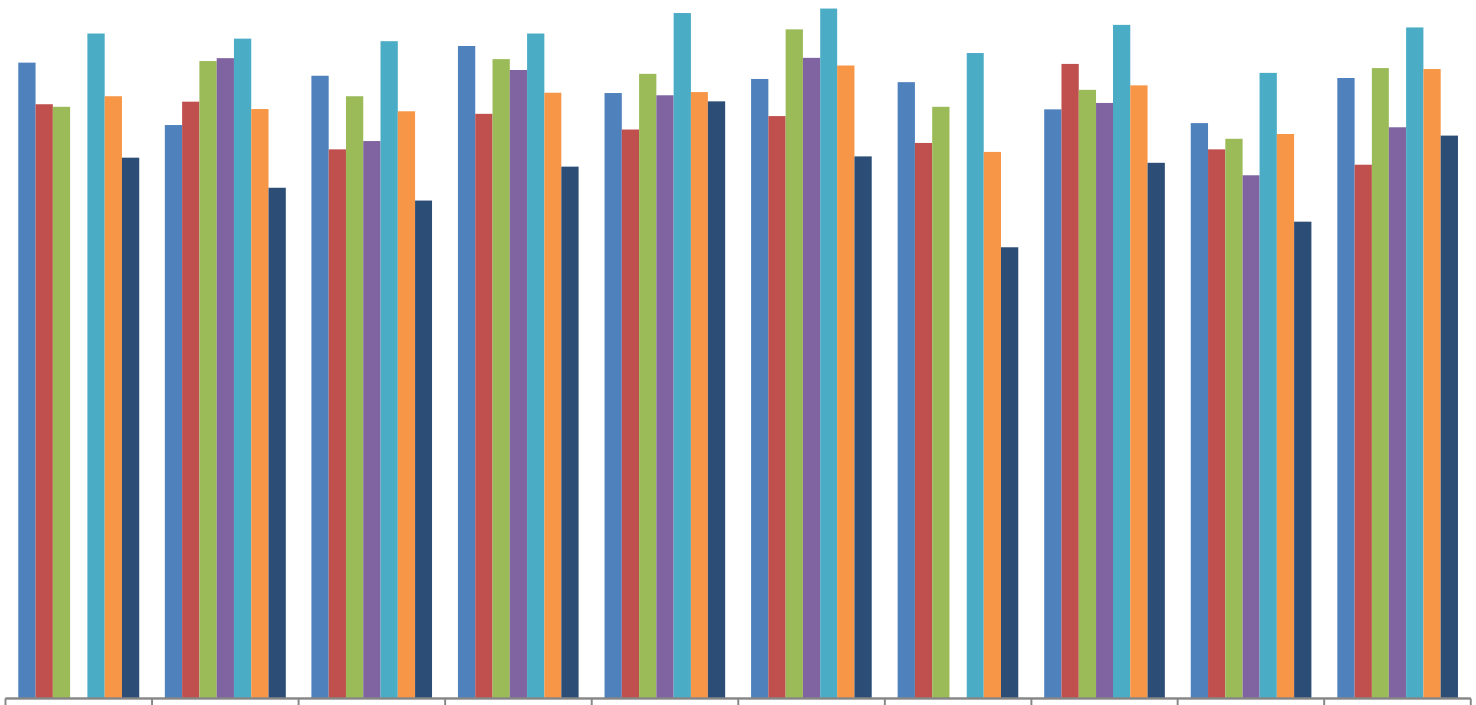
Province had the highest pass rate in four out of the seven subjects in this category.

ix. In Physical Education, Eastern Province had the highest pass rate, with 61.61 percent of candidates passing, while Northern Province had the lowest pass rate, with only 47.76 percent of candidates passing.



	ART & DESIGN	MUSICAL ARTS	DESIGN & TECHNOLOGY	FASHION & FABRICS	FOOD & NUTRITION	HOME MANAGEMENT	PHYSICAL EDUCATION
Girls	64.02	57.55	64.33	62.02	70.55	63.35	54.10
Boys	62.96	57.67	65.50	59.18	67.41	59.85	54.91

Figure 6: 2022 Performance in Practical Subjects by Gender



	Muchinga	Northern	Luapula	Southern	Eastern	Copperbelt	North-Western	Central	Western	Lusaka
ART & DESIGN	65.61	59.19	64.27	67.35	62.49	63.95	63.62	60.81	59.37	64.03
MUSICAL ARTS	61.31	61.61	56.68	60.35	58.70	60.09	57.33	65.48	56.66	55.08
DESIGN & TECHNOLOGY	61.05	65.78	62.16	65.99	64.45	69.05	61.06	62.81	57.77	65.05
FASHION & FABRICS	0.00	66.08	57.52	64.87	62.25	66.11	0.00	61.45	53.99	58.94
FOOD & NUTRITION	68.63	68.10	67.84	68.62	70.74	71.19	66.61	69.51	64.55	69.24
HOME MANAGEMENT	62.16	60.84	60.61	62.52	62.58	65.34	56.41	63.27	58.26	64.96
PHYSICAL EDUCATION	55.8056	52.7119	51.3707	54.8875	61.609	55.9373	46.5619	55.2874	49.1953	58.0996

Figure 7: 2022 Performance in Practical Subjects by Province

2.5. Performance by Grade Distribution

The School Certificate examination grades are categorized from Grade one (1) to Grade nine (9), as follows:

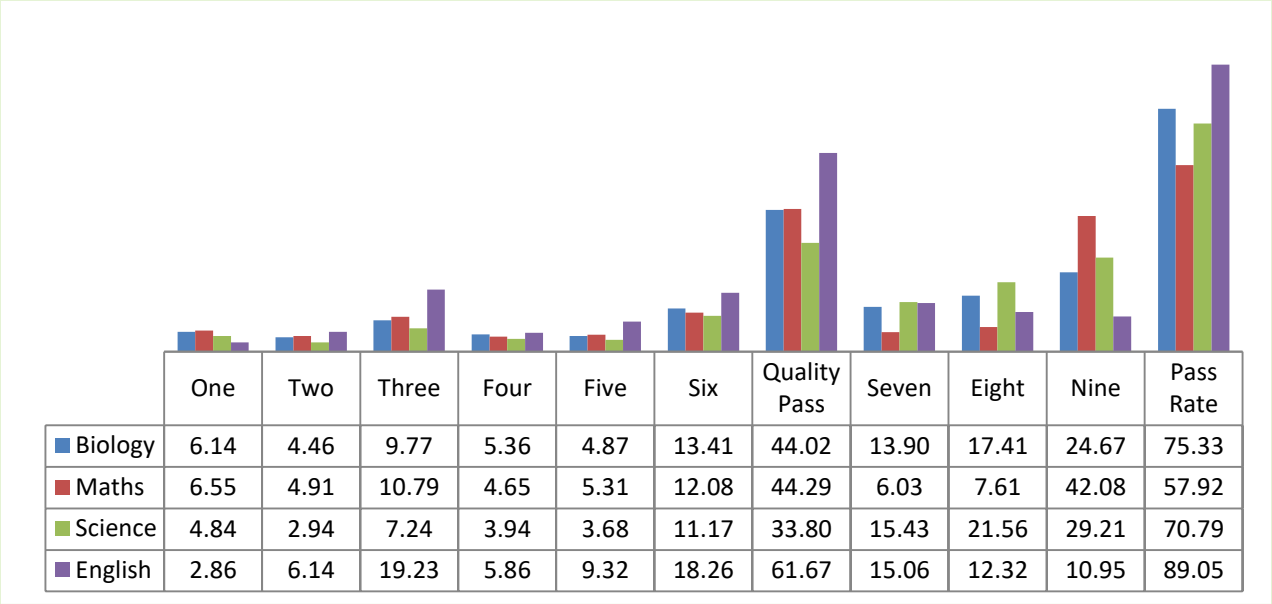
Table 6: School Certificate Grades Description

RANGE	GRADE	GRADE DESCRIPTION
75% - 100%	Grade 1	Upper Distinction
70% - 74%	Grade 2	Lower Distinction
65% - 69%	Grade 3	Upper Merit
60% - 64%	Grade 4	Lower Merit
55% - 59%	Grade 5	Upper Credit
50% - 54%	Grade 6	Lower Credit
45% - 49%	Grade 7	Upper Pass (Satisfactory)
40% - 44%	Grade 8	Lower Pass (Satisfactory)
0% - 39%	Grade 9	Fail (Unsatisfactory)

2.5.1. When the grade distributions of four common subjects (English, Mathematics, Biology and Science) were analysed, it was observed that the highest proportion of candidates obtaining Grade One was in Mathematics (6.55%) followed by Biology (6.14 %). Science was third at 4.84 percent while English Language was the least with 2.86 percent. Mathematics has been reported to have the highest proportion of candidates obtaining Grade One from 2014.

2.5.2. Mathematics had the largest proportion of candidates failing at 42.08 percent, followed by Science at 29.21 percent, and Biology at 24.67 percent. The least proportion of failures was recorded in English Language at 10.95percent.

2.5.3. A similar trend in the distribution of grades within each of the four subjects was observed in 2021.



	One	Two	Three	Four	Five	Six	Quality Pass	Seven	Eight	Nine	Pass Rate
Biology	6.14	4.46	9.77	5.36	4.87	13.41	44.02	13.90	17.41	24.67	75.33
Maths	6.55	4.91	10.79	4.65	5.31	12.08	44.29	6.03	7.61	42.08	57.92
Science	4.84	2.94	7.24	3.94	3.68	11.17	33.80	15.43	21.56	29.21	70.79
English	2.86	6.14	19.23	5.86	9.32	18.26	61.67	15.06	12.32	10.95	89.05

Figure 8: 2022 Grade Distributions in Four selected Subjects

2.5.4. Literature and Languages

The Literature and Language cluster is composed of English, French, Literature in English, and the seven Zambian languages (Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi). The following is an analysis of the performance for this category:

i. Silozi had the highest number of candidates obtaining distinctions at 16.30 percent, followed by French at 14.10 percent. In comparison, in 2021, Silozi had the highest number of candidates obtaining distinctions at 15.95 percent, followed by Chitonga at 12.73 percent.

ii. Similar to 2020 and 2021, Literature in English recorded the lowest pass rate in 2022, at 71.03 percent. However, there was an improvement of 1.45 percentage points in the Literature in English pass rate in 2022 compared to the previous year.

iii. Girls generally outperformed boys in Chitonga, Cinyanja, English, French, Literature in English, and Silozi. On the other hand, boys performed better than girls in Icibemba, Kiikaonde, Lunda, and Luvale. These findings are presented in Table 7.

Table 7: 2022 Grade 12 Proportion of candidates by Grade and Sex in Literature & Language

Subject	Sex	One	Two	Three	Four	Five	Six	Quality Pass	Seven	Eight	Nine	Pass Rate
Chitonga	Females	4.67	7.99	16.31	5.51	5.98	14.37	**54.83**	28.35	11.75	5.07	**94.93**
	Males	4.67	6.27	16.44	4.82	6.77	14.34	**53.31**	28.87	12.21	5.61	**94.39**
	Total	4.67	7.12	16.38	5.16	6.38	14.36	**54.07**	28.61	11.98	5.34	**94.66**
Cinyanja	Females	3.02	6.26	18.10	9.85	8.29	20.04	**65.57**	19.09	9.94	5.40	**94.60**
	Males	2.59	5.31	17.45	9.04	8.77	18.15	**61.31**	21.18	11.87	5.65	**94.35**
	Total	2.78	5.73	17.73	9.40	8.56	18.98	**63.18**	20.26	11.02	5.54	**94.46**
English Language	Females	3.66	7.07	20.59	5.89	9.40	17.72	**64.33**	14.23	11.31	10.12	**89.88**
	Males	2.07	5.23	17.89	5.83	9.25	18.79	**59.06**	15.88	13.30	11.76	**88.24**
	Total	2.86	6.14	19.23	5.86	9.32	18.26	**61.67**	15.06	12.32	10.95	**89.05**
French	Females	9.39	5.10	8.16	5.10	3.27	7.14	**38.16**	28.98	26.12	6.73	**93.27**
	Males	9.97	4.05	9.35	4.67	6.23	7.17	**41.43**	31.15	18.69	8.72	**91.28**
	Total	9.62	4.69	8.63	4.93	4.44	7.15	**39.46**	29.84	23.18	7.52	**92.48**
Icibemba	Females	2.52	4.41	15.13	9.16	8.01	15.05	**54.29**	16.07	13.02	16.62	**83.38**
	Males	4.41	6.71	16.31	8.49	6.66	14.21	**56.79**	15.02	12.03	16.15	**83.85**
	Total	3.58	5.69	15.79	8.79	7.26	14.58	**55.68**	15.49	12.47	16.36	**83.64**

Kiikaonde	Females	3.17	8.68	22.96	6.46	6.46	16.51	**64.23**	15.03	9.63	11.11	**88.89**
	Males	3.58	8.79	22.89	5.75	7.81	16.81	**65.62**	16.27	7.81	10.30	**89.70**
	Total	3.37	8.73	22.92	6.11	7.12	16.66	**64.92**	15.64	8.73	10.71	**89.29**
Literature In English	Females	4.42	6.05	16.43	6.83	7.94	15.32	**57.00**	10.92	8.39	23.69	**76.31**
	Males	1.93	3.48	10.80	5.17	6.12	13.54	**41.04**	11.95	11.11	35.90	**64.10**
	Total	3.34	4.94	14.00	6.12	7.15	14.55	**50.10**	11.37	9.57	28.97	**71.03**
Lunda	Females	3.47	7.19	22.28	8.14	9.22	16.05	**66.35**	11.02	7.19	15.45	**84.55**
	Males	3.93	9.02	26.49	9.21	10.56	14.30	**73.51**	10.56	7.29	8.64	**91.36**
	Total	3.73	8.20	24.61	8.74	9.96	15.08	**70.32**	10.76	7.25	11.67	**88.33**
Luvale	Females	1.06	5.16	17.72	6.75	11.38	16.80	**58.86**	27.65	10.05	3.44	**96.56**
	Males	3.50	5.84	22.44	7.78	8.95	17.64	**66.15**	21.92	9.34	2.59	**97.41**
	Total	2.29	5.50	20.10	7.27	10.15	17.22	**62.54**	24.75	9.69	3.01	**96.99**
Silozi	Females	6.63	9.03	21.39	7.49	8.73	13.44	**66.71**	14.93	9.63	8.73	**91.27**
	Males	7.81	9.23	19.54	7.41	7.02	12.42	**63.43**	15.86	10.46	10.26	**89.74**
	Total	7.18	9.12	20.53	7.45	7.93	12.96	**65.18**	15.36	10.01	9.44	**90.56**

2.5.5. Social Sciences

Below is an overview of learner performance in the Social Science cluster, which comprised Civic Education, Christian Religious Education (2044 and 2046), History, and Geography.

i. Geography had the highest pass rate of 89.80 percent, which was consistent with the results from 2021 and 2020. Civic Education came in second with a pass rate of 80.11 percent.

ii. History recorded the highest proportion of candidates failing (25.42%) in the Social Science cluster, similar to the previous year. However, the proportion decreased by 1.95 percentage points compared to 2021.

Table 8: 2022 Grade 12 Proportion of candidates by Grade and Sex in Social

Subject	Sex	One	Two	Three	Four	Five	Six	Quality Pass	Seven	Eight	Nine	Pass Rate
Civic Education	Females	6.87	6.49	14.69	8.31	6.69	13.55	56.60	12.86	11.12	19.42	80.58
	Males	6.56	6.27	14.32	7.85	6.51	13.54	55.06	13.28	11.31	20.35	79.65
	Total	6.71	6.38	14.50	8.08	6.60	13.55	55.82	13.08	11.22	19.89	80.11
Geography	Females	1.94	2.41	7.74	6.28	6.25	16.70	41.32	24.18	22.67	11.83	88.17
	Males	3.17	3.87	10.84	7.71	7.22	17.78	50.59	21.44	19.33	8.64	91.36
	Total	2.57	3.16	9.32	7.01	6.74	17.25	46.05	22.78	20.96	10.20	89.80
History	Females	3.73	4.56	12.49	4.77	6.53	14.45	46.54	13.27	12.66	27.53	72.47
	Males	3.88	5.54	14.91	6.28	7.93	15.51	54.03	11.75	11.23	22.98	77.02
	Total	3.80	5.01	13.61	5.47	7.18	14.94	50.02	12.57	12.00	25.42	74.58
Religious Education 2044	Females	7.30	12.09	20.88	6.90	7.08	9.69	63.94	7.78	7.40	20.88	79.12
	Males	5.62	10.39	18.86	5.36	5.88	8.67	54.78	6.93	7.10	31.18	68.82
	Total	6.61	11.39	20.05	6.27	6.59	9.27	60.18	7.43	7.28	25.11	74.89
Religious Education 2046	Females	6.66	6.37	13.47	6.97	5.35	10.95	49.77	13.78	13.79	22.67	77.33
	Males	6.42	5.73	11.76	6.49	5.25	10.57	46.21	13.64	14.89	25.26	74.74
	Total	6.54	6.06	12.64	6.73	5.30	10.77	48.04	13.71	14.32	23.93	76.07

iii. The highest number of candidates obtaining distinctions in the Social Science grouping was in Religious Education (R.E - 2044) with 18.00 percent, followed by Civic Education at 13.1 percent. Geography recorded the lowest proportions of distinctions at 5.72 percent, which follows a trend similar to 2021.

iv. Girls outperformed boys in Civic Education (girls: 80.58%, boys: 79.65%), Religious Education - 2044 (girls: 79.12%, boys: 68.82%), and Religious Education - 2046 (girls: 77.33%, boys: 74.74%).

2.5.6. Business Studies

The Business Studies category included Commerce and Principles of Accounts. Here is an overview of learner performance:

i. The pass rate for Principles of Accounts in 2022 remained the same as 2021 at 85.48 percent.

ii. Similar to 2021 and 2020, Commerce had the lowest pass rate in 2022, with only 64.21 percent of candidates passing.

iii. Similar to 2021, Commerce had the highest proportion of candidates failing in 2022 at 35.79 percent. However, the 2022 proportion decreased by 1.16 percentage points compared to the previous year.

iv. The quality of passing in the Business Studies group remained relatively below 50 percent overall, as shown in Table

Table 9: 2022 Grade 12 Proportion of candidates by Grade and Sex in Social and Business Studies

Subject	Sex	One	Two	Three	Four	Five	Six	Quality Pass	Seven	Eight	Nine	Pass Rate
Commerce	Females	3.62	4.81	11.95	5.28	5.89	17.27	48.82	5.72	8.51	36.95	63.05
	Males	3.10	4.81	13.29	5.66	6.83	17.88	51.57	5.17	8.59	34.67	65.33
	Total	3.35	4.81	12.64	5.47	6.37	17.58	50.23	5.44	8.55	35.79	64.21
Principles of Accounts	Females	4.23	3.81	9.32	4.84	5.74	12.99	40.93	19.83	24.90	14.34	85.66
	Males	4.94	4.05	9.54	4.54	5.72	13.05	41.83	19.67	23.79	14.70	85.30
	Total	4.58	3.93	9.43	4.69	5.73	13.02	41.38	19.75	24.35	14.52	85.48

2.5.7. Mathematics and Science Subjects (Natural Sciences)

This category encompasses the following subjects: Computer Studies, Mathematics, Additional Mathematics, Physics, Chemistry, Biology, Agricultural Science, and Science. The learners' performance in these subjects is detailed below.

i. In this category, Computer Studies had the highest pass rate at 91.04 percent, followed by Chemistry at 85.55 percent and Physics at 85.30 percent. Mathematics had the lowest pass rate at 57.92 percent, which was also the case in 2021.

ii. Similar to 2021, the subjects with the highest percentage of candidates obtaining distinctions in 2022 were Physics at 27.24 percent and Additional Mathematics at 25.78 percent, while Science had the lowest percentage at 7.78 percent.

iii. Boys performed better than girls in all the subjects within this group, as was the case in 2021.

Table 10: 2022 Grade 12 Proportion of candidates by Grade and Sex in Natural Sciences

Subject	Sex	One	Two	Three	Four	Five	Six	Quality of Pass	Seven	Eight	Nine	Pass Rate
Additional Maths	Females	11.04	10.43	20.57	4.99	5.82	12.74	65.60	7.03	5.44	21.93	78.07
	Males	16.02	13.40	20.79	6.01	5.08	9.85	71.15	5.28	5.24	18.32	81.68
	Total	13.74	12.04	20.69	5.54	5.42	11.17	68.61	6.08	5.34	19.98	80.02
Agricultural Science	Females	3.10	4.96	15.00	5.74	7.98	15.58	52.35	11.05	12.11	24.49	75.51
	Males	3.73	6.65	17.93	6.05	8.25	15.13	57.73	9.83	11.38	21.06	78.94
	Total	3.45	5.91	16.66	5.91	8.13	15.32	55.39	10.36	11.70	22.55	77.45
Biology	Females	5.76	4.16	9.00	5.08	4.69	13.20	41.88	14.04	18.25	25.83	74.17
	Males	6.53	4.76	10.54	5.65	5.05	13.62	46.15	13.75	16.58	23.52	76.48
	Total	6.14	4.46	9.77	5.36	4.87	13.41	44.02	13.90	17.41	24.67	75.33
Chemistry	Females	11.34	8.45	15.46	7.09	4.86	12.24	59.44	13.23	11.95	15.38	84.62
	Males	13.73	9.83	16.78	7.46	4.94	11.25	63.98	11.07	11.16	13.79	86.21
	Total	12.73	9.25	16.23	7.30	4.91	11.66	62.08	11.97	11.49	14.45	85.55
Computer Studies	Females	11.13	7.48	13.88	4.19	7.36	11.49	55.54	18.61	14.84	11.01	88.99
	Males	10.91	7.33	16.36	5.08	7.49	13.74	60.91	19.44	12.11	7.54	92.46
	Total	11.00	7.39	15.34	4.71	7.44	12.82	58.70	19.10	13.23	8.96	91.04
Mathematics	Females	4.92	3.82	9.39	4.30	5.18	12.32	39.94	6.26	8.26	45.54	54.46
	Males	8.14	5.98	12.16	5.00	5.43	11.84	48.55	5.80	6.97	38.68	61.32

	Total	6.55	4.91	10.79	4.65	5.31	12.08	44.29	6.03	7.61	42.08	57.92
Physics	Females	15.43	7.05	14.15	4.95	5.07	10.07	56.72	13.70	12.17	17.41	82.59
	Males	21.68	8.99	15.07	5.99	5.66	8.26	65.64	11.88	9.70	12.77	87.23
	Total	19.07	8.19	14.69	5.55	5.42	9.01	61.93	12.64	10.73	14.70	85.30
Science	Females	3.72	2.51	6.40	3.54	3.38	10.79	30.35	15.67	22.72	31.26	68.74
	Males	5.95	3.37	8.07	4.34	3.97	11.54	37.24	15.19	20.41	27.16	72.84
	Total	4.84	2.94	7.24	3.94	3.68	11.17	33.80	15.43	21.56	29.21	70.79

iv. In general, Science has a passing quality below 40 percent, while Biology and Mathematics have a slightly higher passing quality above 40 percent. However, these subjects still have higher proportions of candidates failing.

2.5.8. Practical Subjects

Practical subjects include Art and Design, Musical Arts Education, Design and Technology, Fashion and Fabrics, Food and Nutrition, Home Management and Physical Education.

i. In the 2022 examination, all practical subjects had pass rates above 90 percent, with Art and Design recording the highest proportion at 98.82 percent, which was also the case in 2021.

ii. In this category, Design and Technology had the highest proportion of candidates (17.83%) who obtained distinctions, followed by Musical Arts Education (16.22%) and Food and Nutrition (12.72%). Meanwhile, Art and Design had the lowest proportion of candidates obtaining distinctions at 8.26 percent.

iii. As shown in Table 10, Physical Education recorded the highest proportion of candidates failing the subjects at 8.13 percent. The 2022 failure rate for Physical Education however, reduced by 1.46 percentage points.

iv. In terms of gender, girls performed better than boys in Art and Design, Food and Nutrition, Home Management, and Musical Arts Education. However, boys performed better than girls in Design and Technology, Fashion and Fabrics, and Physical Educatio

Table 11: 2022 Grade 12 Proportion of candidates by Grade and Sex in Practical Subjects

Subject	Sex	One	Two	Three	Four	Five	Six	Quality Pass	Seven	Eight	Nine	Pass rate
Art and Design	Females	1.97	6.14	23.96	11.56	10.36	17.43	71.43	22.76	4.91	0.91	99.09
	Males	1.80	6.58	23.74	11.08	10.51	16.42	70.12	22.95	5.54	1.39	98.61
	Total	1.88	6.38	23.84	11.29	10.44	16.87	70.70	22.87	5.26	1.18	98.82
Design and Technology	Females	6.79	7.94	18.41	9.39	8.23	15.74	66.50	22.24	7.58	3.68	96.32
	Males	8.33	10.61	21.77	10.35	9.06	13.56	73.68	16.30	7.19	2.82	97.18
	Total	7.93	9.91	20.88	10.10	8.84	14.14	71.79	17.87	7.30	3.05	96.95
Fashion & Fabrics	Females	6.09	9.37	20.61	5.39	7.26	15.22	63.93	24.12	9.37	2.58	97.42
	Males	6.02	3.70	13.89	5.09	9.26	19.91	57.87	25.46	14.81	1.85	98.15
	Total	6.07	7.47	18.35	5.29	7.93	16.80	61.90	24.57	11.20	2.33	97.67
Food & Nutrition	Females	5.66	9.11	24.64	9.45	9.33	16.02	74.22	20.65	4.15	0.98	99.02
	Males	2.76	6.38	18.57	8.23	9.32	17.52	62.77	28.01	7.47	1.75	98.25
	Total	4.61	8.12	22.43	9.01	9.32	16.56	70.06	23.33	5.35	1.26	98.74
Home Management	Females	3.88	8.95	26.32	9.32	8.79	15.32	72.58	17.22	7.67	2.53	97.47
	Males	1.54	5.21	18.94	8.32	8.65	17.35	60.01	25.46	10.88	3.65	96.35
	Total	2.93	7.43	23.32	8.92	8.73	16.14	67.47	20.57	8.97	2.99	97.01
	Females	6.66	8.02	18.17	7.57	7.42	14.38	62.23	26.65	9.69	1.44	98.56

Musical Arts Education	Males	9.00	9.09	18.82	7.44	8.63	12.49	65.47	22.77	9.46	2.30	97.70
	Total	7.72	8.51	18.46	7.51	7.97	13.53	63.69	24.90	9.59	1.83	98.17
Physical Education	Females	6.51	6.15	15.07	2.72	7.01	13.82	51.28	25.03	14.97	8.72	91.28
	Males	8.52	7.59	16.07	3.82	6.50	12.10	54.60	23.13	14.70	7.57	92.43
	Total	7.53	6.89	15.58	3.28	6.75	12.94	52.98	24.06	14.83	8.13	91.87

2.5.9. Grade Distribution by Gender

i. In 2022, boys performed better than girls, with the proportion of boys obtaining grade 1 at 5.62 percent, while for girls it was 4.92 percent. However, both boys and girls improved their performance by 0.37 percent and 0.45 percent, respectively. There was an increase of approximately.

ii. The proportion of candidates, both boys and girls, who received quality grades (grades one-six) increased by around 1 percent. Among boys, the proportion who obtained quality pass grades rose from 49.64 percent in 2021 to 50.74 percent in 2022. Similarly, among girls, the proportion who received quality pass grades increased from 47.00 percent in 2021 to 48.86 percent in 2022.

iii. Due to the slight increase in the proportion of candidates obtaining quality grades, the proportion of candidates receiving a Grade 9 or failing has decreased. In 2022, 21.88 percent of boys obtained a Grade 9, compared to 22.11 percent in 2021. For girls, the proportion obtaining a Grade 9 decreased from 24.18 percent in 2021 to 23.28 percent in 2022.

iv. Mathematics, Commerce, Literature in English, History, Biology, Agricultural Science, and Science had the highest proportions of candidates, both boys and girls, who obtained a Grade 9, with over 20 percent of the candidates in these subjects achieving this grade.

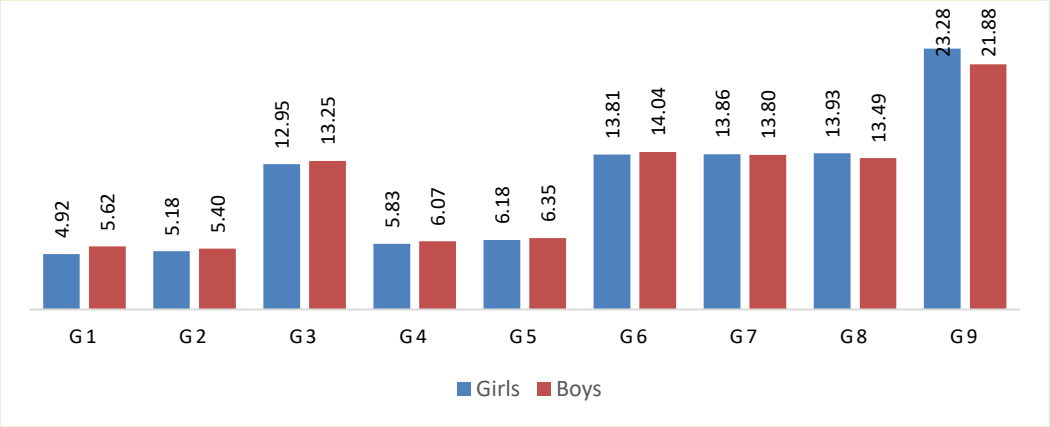


Figure 9: 2022 Performance According to Grade Distributions by Gender

v. On the other hand, Art and Design, Design and Technology, Silozi Additional Mathematics, Physics and Musical Arts Education were among the subjects that recorded high proportions of candidates obtaining between Grade 1 and Grade 6. Refer to Table 11 for a detailed analysis of grade distribution by gender by subject.

Table 12: 2022 Performance According to Grade Distributions for Boys and Girls

	Grades 1 - 6		**Grades 7 - 8**		**Fail**	
	Girls (%)	Boys (%)	Girls (%)	Boys (%)	Girls (%)	Boys (%)
Additional Mathematics	65.57	71.13	12.47	10.52	21.92	18.32
Agricultural Science	52.21	57.62	23.09	21.17	24.42	21.02
Art and Design	71.39	70.06	27.65	28.47	0.91	1.39
Biology	41.79	46.01	32.22	30.23	25.78	23.45
Chemistry	59.39	63.91	25.16	22.20	15.36	13.77
Chitonga	54.81	53.29	40.08	41.06	5.07	5.61
Cinyanja	65.54	61.23	29.02	33.00	5.40	5.64
Civic Education	56.56	55.01	23.96	24.57	19.40	20.33
Commerce	48.79	51.52	14.22	13.75	36.93	34.63

Computer Studies	55.50	60.88	33.43	31.54	11.00	7.53
Design and Technology	66.31	73.57	29.73	23.46	3.67	2.82
English Language	64.32	59.06	25.53	29.17	10.12	11.76
Fashion and Fabrics	63.93	57.87	33.49	40.28	2.58	1.85
Food & Nutrition	74.21	62.75	24.80	35.46	0.98	1.75
French	38.16	41.30	55.10	49.69	6.73	8.70
Geography	41.26	50.49	46.77	40.69	11.81	8.62
History	46.48	53.95	25.90	22.95	27.49	22.95
Home Management	72.57	59.99	24.88	36.32	2.53	3.65
Icibemba	54.26	56.77	29.08	27.05	16.61	16.15
Kiikaonde	64.23	65.55	24.66	24.05	11.11	10.29
Literature in English	57.00	41.02	19.31	23.05	23.68	35.88
Lunda	66.35	73.51	18.20	17.85	15.45	8.64
Luvale	58.78	66.15	37.65	31.26	3.43	2.59
Mathematics	39.93	48.53	14.52	12.77	45.53	38.67
Musical Arts Education	62.23	65.41	36.34	32.20	1.44	2.29
Physical Education	51.27	54.57	39.99	37.81	8.71	7.57
Physics	56.68	65.64	25.85	21.59	17.39	12.77
Principles of Accounts	40.88	41.76	44.68	43.39	14.32	14.68
Religious Education 2044	63.93	54.78	15.17	14.04	20.88	31.18
Religious Education 2046	49.76	46.20	27.57	28.52	22.66	25.25
Science	30.35	37.23	38.38	35.59	31.25	27.15
Silozi	66.71	63.43	24.56	26.31	8.73	10.26

By and large, the grade distributions across subjects were similar for both boys and girls. Analysis of performance according to grade distributions showed that subjects that appear to have a larger proportion of candidates failing the examination, are similar for both boys and girls. Some subjects have consistently recorded high

proportions of candidates obtaining a Grade 9, a pattern which needs to be investigated.

3.0 Subject Specific Performance Analysis

To evaluate the candidates' performance, a qualitative analysis was conducted, based on a review of sample scripts and Chief Examiner's reports. The analysis categorized candidates into three groups based on their level of performance, namely, high, average, and low performers. This approach provides a comprehensive and multi-faceted view of the candidates' strengths and weaknesses, enabling educators to design interventions that meet their specific needs and improve overall performance.

3.1 Literature and Languages

The Literature and Languages category is composed of English Language, French, Literature in English, and seven Zambian languages: Chitonga, Cinyanja, Icibemba, Kiikaonde, Lunda, Luvale, and Silozi.English Language.

3.1.1 English Language

The objective of English Language Paper 1 and 2 is to assess candidates' proficiency and competency in the English language, as specified in the Grade 10 to 12 curriculum (CDC, 2013). These two papers also evaluate the candidates' linguistic ability to communicate effectively in various contexts.

Assessment Objectives

Candidates are assessed based on the following objectives: -

AO1 Knowledge of Vocabulary

- Spelling words correctly e.g.,’ tease’ and not ‘taese’
- Defining a word in the context in which it has been used.
- Using lexical items correctly and appropriately in a given context e.g. homophones (pose/pause), homonyms (present/present), antonyms (long/short), synonyms (allow, let, let), homographs (live/live), etc.

AO2 Application of Language Structures

- Applying the lexical items and grammatical concepts correctly in different sentences e.g., Parts of Speech, Comparison, Condition, Unreal Past, etc.
- Using all the common English Language structures correctly

AO3 Comprehension of Passages/Texts

- Reading various types of texts with understanding.
- Reading, understanding and interpreting various print resources e.g. charts, graphs, etc.
- Explaining unfamiliar words/phrases according to the context in which they are used.
- Interpreting the writer's ideas and perspectives

AO4 Synthesis and Evaluation of Information (Summary)

- Identifying and selecting relevant information from given text.
- Analysing a given situation and producing a continuous piece of writing.
- Tabulating information from passages into tables, charts and diagrams
- Extracting specific information from various print resources.
- Writing note and prose summaries

AO5 Analysis and Synthesis of Information (Composition)

- Writing legibly and effectively to communicate messages.
- Producing kinds of writings required in tertiary education and the world of work such as reports, letter, and speeches.
- Producing different types and styles of writing such as narrative, persuasive and descriptive compositions.
- Writing appropriate style suitable for a particular audience or purpose such as advertisements, notices and curriculum vitae.
- Writing ideas, thoughts, opinions and feelings

Analysis of Performance

Characteristics of high performing candidates

The candidates with high performance demonstrated the following characteristics:

- Good understanding of questions and effective answer presentation.
- Excellent spelling and writing skills, with a strong mastery of the language.
- High levels of punctuation application and correct application of grammar.
- Properly presented compositions with good paragraphing.
- Strong command of vocabulary and sticking to the stipulated summary word limit
- Producing readable and cohesive summary pieces

Characteristics of average performing candidates

The candidates in this category exhibited the following common traits:

- Fair understanding of questions, but with some issues with word order in sentences.
- Use of short or contracted forms, with fairly good understanding of vocabulary and spelling skills.
- Inadequate utilization of sentence or language variety in compositions and rewrites.
- Limited knowledge in the interpretation of rubrics, with wrong usage of tenses and/or switching of tenses.
- Average punctuation skills, with some mistakes in the use of advanced punctuation marks.

Characteristics of low performing candidates

- Not able to extract specific information as required by the given question.
- The candidates in question made frequent errors, exhibiting broken and muddled English and erratic development in their essays. In many cases, they completely misunderstood the topic and included disconnected details.
- Low or no understanding of instructions and rubrics.
- Failure to understand the comprehension passage and its questions.
- None observance of word limitations in summaries, resulting in mere reproduction of the passage

3.1.2 Literature in English

The objective of the Literature in English Examination is to evaluate candidates' performance in relation to the key competencies specified in the Literature in English Syllabus for Grade 10-12 (CDC, 2013).

Assessment Objectives

Candidates are assessed based on the following assessment objectives:

AO1 Knowledge of Literary Terminologies and Devices

- Defining literary terminologies and devices as used in a given context.
- Applying literary terminologies and devices in a relevant situation.
- Interpreting and distinguishing forms of written literature.
- Recognising and distinguishing types of literary genres.
- Defining and explaining figures of speech as used in poetry, drama, and prose.
- Identifying the elements of poetry, drama, and prose.

AO2 Comprehension of Contexts (Contextual questions)

- Reading and comprehension of texts.
- Extracting relevant information from a given context.
- Making inferences in each contextual situation.

AO3 Analysis and Synthesis of Information (Essay writing)

- Producing a variety of written work emanating from studied texts.
- Distinguishing between fact and fiction.
- Analysing the elements of a prescribed set book such as characters, plot, setting, theme, and language style.
- Identifying and evaluating styles of writing such as humour, satire, irony, allegory, comedy, tragedy, tragicomedy.
- Reading and analysing and reviewing plays, prose and poems

Analysis of Performance

In literature, candidates are expected to possess the ability to appreciate stories and understand societies in general. The subject requires the demonstration of critical and aesthetic thinking skills. The syllabus covers texts that delve into a wide range of subjects and themes, such as politics, religion, and marriage. Although most of the texts are written to entertain, they also require the ability to critically analyse events. Therefore, candidates should be able to discuss, analyse, interpret, and deduce the underlying meaning of the texts.

To evaluate the performance, the candidates were divided into three categories: high-performing, average-performing and, low-performing candidates. The characteristics exhibited by each category of candidates were then analysed.

Characteristics of high performing candidates

Candidates in this category demonstrated the following characteristics (Paper 1 and Paper 2):

- Strong reading and comprehension skills
- Proficiency in the use of the English language
- Comprehensive understanding and application of literary terminologies and devices
- Effective citation of relevant and appropriate examples
- Clear and concise explanations
- Demonstrated understanding of the subject matter in essay questions
- Effective use of quotations from the texts covered.
- Coherent and cohesive presentation of responses
- Skilful synthesis of information, ideas, and opinions.

Characteristics of average performing candidates

- The candidates with average performance demonstrated the following characteristics.
- Fair knowledge and application of literary terminologies and devices.

- Average proficiency in the use of the English language.
- Fair handling of the subject matter.
- Inability to balance mastery of material in essay questions.
- Reasonable understanding of the prescribed books.
- Fair interpretation of questions and situations.
- Some rubric infringement in some scripts.
- Reproduction of learned material instead of addressing questions.
- Ability to generally grasp the concepts of the questions.
- Inadequate punctuation and paragraphing.
- Minor internalization of themes and sub-themes.

Characteristics of poor performing candidates

Candidates in this category exhibited the following challenges.

- Inability to recall the definitions of literal terms. For instance, in question 1 (i), many candidates could not define the word 'stanza.' Similarly, in question 1 (ii), they could not define the word 'metaphor.'
- Poor retention of facts from the details given in the book. This was evident in question 1 (iii), where candidates could not give three examples as required.
- Failure to appreciate the theme was another key factor. In question 1 (vi), which required a discussion of a theme, many candidates failed to capture the theme of the literature.
- Some candidates confused facts of the story with those of other authors. For instance, mentioning "Lakunle" of "The Lion and the Jewel" by Wole Soyinka in their response to a question about "Woyengi," authored by Ijimere.
- Poor reading habits by the candidates.
- While candidates were only expected to study "Woyengi" many had read the entire collection, resulting in answers that were a jumble of all three plays.

3.1.3 French

The Senior Secondary School French examination is designed to evaluate candidates' language proficiency in four key areas: listening, speaking, reading, and writing. To assess these skills, seven specific objectives have been identified as the main areas of focus for the French assessment. These objectives are divided into two papers: These are: A) Paper 1, which is a written examination that assesses candidates' proficiency in composition and translation, structure, reading comprehension, and summary and B) Paper 2, which is the School-Based Assessment (SBA) that evaluates candidates' listening comprehension and contextual communication skills in oral assessments. The goal of this examination is to provide a comprehensive evaluation of candidates' French language proficiency across multiple language skills and assessment objectives.

Analysis of Performance

In 2022, there was a noticeable improvement in candidate performance compared to 2021, with a 4.32 percentage point increase in mean score from 62.06 percent to 66.38 percent. However, when comparing performance across papers, candidates performed better in Paper 1, with a mean score of 82.25 percent compared to a mean score of 55 percent in Paper 2. In terms of gender performance, males outperformed females. This trend was consistent across different grade levels. Although the quality of passing increased for both sexes between 2021 and 2022, males continued to have a better quality of passing overall, with an 11.66 percentage point increase in passing quality compared to a 7.62 percentage point increase for females.

Characteristics of a high performing candidates

Candidates in this category exhibited the following characteristics.

- Logical organization of ideas in their compositions
- Strong application of language structures
- Excellent understanding of grammar and ability to apply grammar rules correctly.
- Fairly accurate translation skills (in both directions: French to English and English to French)

- Strong composition writing skills.
- Adequate conjugation of verbs
- Exceptional reading and comprehension skills
- Outstanding interpretation of comprehension questions
- Accurate spelling and effective usage of vocabulary.

Characteristics of average performing candidates

Candidates in this category demonstrated the following characteristics:

- Adequate application of language structures.
- Basic understanding of grammar with some incorrect application of rules.
- Average to below average translation skills (in both directions: French to English and English to French)
- Adequate but not strong composition writing skills.
- Below average conjugation of verbs.
- Fairly good reading and comprehension skills.
- Fairly accurate interpretation of comprehension questions
- Very limited vocabulary and tendency to use some incorrect words.
- Misspelling of some words.

Characteristics of low performing candidates

- Incorrect application of language structures
- Little or no understanding of grammar, with frequent mistakes in applying grammar rules.
- Inaccurate translation skills (in both directions: French to English and English to French).
- Poor composition writing skills.
- Below average conjugation of verbs.
- Very low reading and comprehension skills.
- Frequent misinterpretation of comprehension questions.

- Very limited vocabulary, with little command of the language and frequent errors in word usage.
- Misspelling of basic words.

Recommendations for improvement

To improve the teaching and learning of French, the following recommendations are proposed:

- Teachers should focus on intensifying the teaching of translation skills.
- Teachers should ensure that all types of compositions stipulated in the syllabus are covered.
- The Ministry should deploy more qualified French teachers to schools.
- Schools should provide the necessary resources, including required books, to enable teachers to cover the syllabus fully.

3.1.4 Zambian Languages

The purpose of assessing candidates at Grade 12 in the seven Zambian Languages namely: (Lunda, Luvale, Kiikaonde, Icibemba, Chitonga, Cinyanja and Silozi) is to measure their proficiency in Composition, Literature, Proverbs and Sayings, Translation, Comprehension, Summary and Language Structure. All these components assess the four language skills, which are: listening, speaking, reading, and writing.

Assessment Objectives

Candidates are assessed based on the following expectations:

AO1 Comprehension

- Reading a given passage and answering a variety of questions i.e., surface, inference, vocabulary
- Identifying main theme(s) in given passages
- Interpretation of read passages.
- Identifying required information from given texts

AO2 Composition

- Writing various types of compositions such as autobiography, narrative, expository essays, reports, descriptive, letters and speeches.
- Writing guided and unguided compositions.
- Changing narratives to dialogue and vice-versa

AO3 Summary

- Summarising given texts i.e. locating and isolating required information e.g. facts, opinions.
- Writing advertisements, articles, notices and posters using correct features.
- Making notes from a given passage.
- Extracting information from a passage i.e. in form of prose, graphs, pie charts, tables and diagrams.
- Transforming notes into prose summary and writing within a given word limit

AO4 Language Structure

- Using locatives e.g. ku (-), pa (-), kwa (-) (ku munzi) kumunzi.
- Identifying affixes (prefixes, infixes, suffixes) in given words.
- Constructing reduplicated and compound words.
- Formulating different forms of a verb e.g. negative/positive.
- Arranging/using idiophones according to semantic fields i.e. twaa (very white) in Silozi, bwi-bwi (very dark) in Lunda, pyuu (very red) in Chitonga.
- Changing direct to indirect speech and vice versa i.e. use of correct open and closed inverted commas.
- Identifying the negative/positive forms in sentences.
- Identifying verb/noun forms in sentences.

- Identifying and using verbal extensions in sentences e.g. causative, intensive, reciprocative, applicative.
- Identifying and using adverbs/adverbial phrases e.g time, manner, place, frequency.
- Making nouns from verbs and using them in sentences and vice-versa.
- Identifying parts of a sentence i.e., Subject-verb-object (SVOO) e.g. Namatama utapisa likubo zabo kuku (subject – Namatama; verb – utapisa; direct object – likubo; indirect object – kuku)

AO5 Translation

- Using appropriate translation techniques to translate a given passage.
- Using appropriate translation techniques to transliterate loan and borrowed words.
- Demonstrating proficiency in both the source and target language

AO6 Literature

- Analysing different kinds of text in prescribed books e.g setting, characterisation, language, plot, and theme.
- Explaining and analysing literary elements in prescribed books.
- Interpreting figures of speech e.g. metaphors, similes, irony, euphemism etc
- Using figures of speech in sentences e.g. irony, allegory.
- Analysing and evaluating literary works e.g. purpose and values of the writer.
- Identifying different types of poems i.e. panegyric, elegiac, lyric and praise.
- Identifying different aspects used in poetic analysis i.e. mood, symbolism, alliteration, assonance, mitre, stanza

AO7 Proverbs and Sayings

- Explaining the usage and meaning of proverbs and sayings in a speech.
- Explaining and identifying the usage of proverbs and sayings.
- Using various proverbs and sayings in sentences

Analysis of Performance

In the 2022 Zambian languages examination, Kiikaonde had the highest mean score at 66.36 percent, followed by Silozi at 60.08 percent, Icibemba at 57.27 percent, Chitonga at 53.2 percent, Lunda at 49.11 percent, Cinyanja at 47.6 percent, and Luvale with the lowest mean score at 42.39 percent. Compared to 2021, there was a significant increase in the mean scores of Kiikaonde, Icibemba, and Chinyanja, while a decrease was recorded in Lunda, Chitonga, and Luvale. Boys had a higher pass rate than girls in Lunda, Luvale, Icibemba, and Kiikaonde, while girls had a higher pass rate than boys in Cinyanja, Chitonga, and Silozi. The quality of passing had drastically improved in all seven languages, with Icibemba and Chinyanja recording the highest increase in pass rates.

General Observations

- Most candidates showcased poor literacy levels, with some struggling to extract information from given passages due to failure to read.
- Some structured questions and composition skills (AO2) were poorly answered, with many candidates only attempting multiple-choice questions under this section.
- Some candidates lacked the skill to formulate proper titles for compositions, struggled with argumentative composition, and failed to choose a side.
- Few candidates attempted the formal letter, and some lacked knowledge of the correct format.
- Poor introductions and conclusions were common, with some candidates failing to include a salutation or date in formal letter writing.
- Many candidates who attempted the expository composition misunderstood the topic and simply copied questions.

- Some candidates failed to display writing skills and their work lacked logical presentation of ideas, paragraphing, and punctuation marks.
- Some candidates lacked basic summary skills, the ability to identify key information and verbs, observe word limits and struggled with maintaining concord and interpreting instructions given through active verbs.
- Additionally, some candidates struggled with changing sentences from direct to reported speech, deriving nouns from verbs, converting sentences from one tense to another, and translating key words and concepts in the source text, resulting in word-for-word or literal translation.
- Some candidates mixed up characters from one novel to another and failed to answer questions based on themes in the books, with poor reading culture among learners and lack of access to adequate prescribed literature books contributing to their poor performance.
- Some candidates also failed to give correct meanings and complete and correct proverbs.

Characteristics of High Performing Candidates

The candidates in this category demonstrated the following strengths:

- Strong understanding of the questions, resulting in clear and concise language.
- Raised sufficient points in compositions and effectively presented their work in all sections.
- Adequate and thorough answering of all questions in all sections, with a logical presentation of work and good language expression.
- Accurate spelling and correct orthography, with strong comprehension writing skills.
- Compositions had appropriate titles, capital letters, good introductions, sound content, and logical presentation of ideas, while formal letter writers adhered to all requirements.
- Strong performance in literature, idioms, and proverbs.

- Legible handwriting, accurate numbering of answers, and correct use of punctuation and well-written headings.
- Ability to translate meaningful sentences, rather than word-for-word, with clear, brief, and straight-to-the-point responses.

Characteristics of Average Performing Candidates

The candidates in this category demonstrated the following strengths:

- While they demonstrated a strong understanding of questions, they did not raise enough points in compositions and lacked sufficient knowledge on idioms and proverbs.
- Some candidates did not follow instructions, resulting in incomplete answers with cut-out sentences and a mixture of narrative and expository compositions.
- The candidates' work lacked neatness and was written in adulterated language.
- Despite these challenges, the candidates adequately answered all questions and expressed themselves well in the target language.
- In addition, the candidates had legible handwriting and fair spelling and orthography.

Characteristics of Low Performing Candidates

The candidates in this category demonstrated the following strengths:

- Some candidates struggled to understand certain questions, resulting in inadequate responses.
- The compositions lacked sufficient points, correct orthography, titles, introduction and conclusion, and paragraphing.
- The candidates performed poorly in literature books, and some failed to attempt translation.
- There was non-adherence to standard vocabulary, with some candidates copying questions instead of providing answers.
- Some candidates were unable to interpret questions.
- In addition, the candidates demonstrated poor language expression.

Recommendations

- Teachers should teach all aspects of Language as presented in the syllabus, including reading comprehension, composition writing, formal letter writing, and translation skills.
- Zambian Languages should be taught by trained teachers who can effectively impart knowledge to learners.
- Teachers must teach and explain literature texts to learners, providing guidance and helping them comprehend themes, characters, and concepts presented in the literature texts, rather than just providing learners with books for self-reading.
- Candidates must be taught the correct way of answering literature questions, including the structure and format of the questions and the correct way to present their responses.
- Teachers must use recommended or prescribed course books for proverbs and sayings, as these books are designed to provide a comprehensive understanding of the language and its use.
- Schools should procure enough books for use in Zambian languages to ensure that all learners have access to adequate learning materials and resources. This will help to create a conducive learning environment, where learners can fully engage with the subject and enhance their language skills.

3.2 Social Sciences

The following subjects comprise the Social Sciences subject grouping: Civic Education (2030/1), Religious Education (2044/1), Religious Education (2046/1), History (2167), and Geography (2218).

3.2.1 Civic Education (2030)

The aim of assessing Senior Secondary School Civic Education is to evaluate candidates' comprehension of the political, socio-economic, cultural, and technological factors that are crucial to Zambia's democratic governance system. This subject aims to educate citizens about their responsibilities, rights, values, and attitudes, which in turn enables them to comprehend political, social, and cultural matters that are important for Zambia's democratic governance system.

Assessment Objectives

- Understand Zambia's political, socio-economic, and technological processes and appreciation of good governance.
- Recognize the duties, responsibilities, freedoms, and rights of a citizen.
- Appreciate Zambia's traditions, values, and belief systems.
- Read and interpret graphs, tables, diagrams, maps and statistical data.
- Use the knowledge and identify implications and solutions to Zambia's economic and social development.
- Participate in matters of national development.
- Adhere to fiscal discipline and financial expenditure and design a plan for family sustainability.
- Predict conflict and create solutions to challenges in everyday life.
- Evaluate the findings of action projects.

Analysis of Performance

Civic Education in 2022 recorded a mean score of 39.27 percent. This represented an improvement 6.55 percentage points in 2021. With regards to proportion of candidates that passed the subject, 80.11 percent of the candidates that sat Civic Education in 2022 passed. This represented an improvement of 27.50 percent from 2021.

The following questions in the Civic Education examination were poorly answered by many candidates:

- Question 5 on Corruption: Candidates confused bribery acceptance with commission.
- Question 11 on the Zambian Legal system: Candidates failed to identify the meaning of the catch word "adversary procedure."

- Question 12 on family law: Candidates misunderstood the concept of "life interest in the house."
- Question 15 on Human rights: Candidates had difficulties recalling the article in the Convention on the elimination of all forms of Discrimination Against Women (CEDAW) that guarantees women equality in political and public life.
- Question 20 on globalization: Candidates did not understand the joint effort of three countries in a donation, and failed to pay attention to terminologies used in domestic and foreign trade.
- Question 1 in Section B on governance: Candidates' responses were average on relating the passage to the birth and foundation of the multi-party system in Zambia.
- Question 2 on vote protection: Candidates misunderstood the question.
- Question 3 on financial education: Candidates did not understand the concept of "village banking".
- Question 5 on globalization: Candidates failed to explain the relationship between foreign exchange and foreign investment, tourism, and technology, and how these helped to earn income for the benefit of the country.
- Question 1 in Section C on governance: Candidates did not understand the concept of impact on people's lives and sources of revenue for local government.
- Question 3 (b) on the system of governance in Zambia: Candidates had challenges identifying malpractices that could lead to the nullification of an election result.
- Question 5 on human rights: Candidates failed to understand the terms or obligations of the Convention against Torture.

The following topics were well-answered in the Civic Education examination:

- In Section A, multiple-choice questions 1-19, covering topics such as Governance, Citizenship, Culture, Substances, Zambian Bill of Rights, Civil Societies, Poverty, Environmental Degradation, and Development Planning.
- In Section B, questions 2, 4, and 5 on topics such as Governance, Family Law, Globalization, and Development Planning.

- In Section C, questions 1-3 on topics such as Governance, Globalization, and Culture.

Competencies (skills) exhibited by high performers.

- Candidates demonstrated good essay writing skills with precise and clear work, well-structured with introduction, main body, and conclusion in some cases, particularly section C.
- English language proficiency was generally good with few errors across all sections, A, B, and C.
- Candidates showed good interpretive skills, correctly interpreting the Table in section B Q1 and an extract of a "Will", without difficulties.
- Candidates demonstrated good understanding of the subject matter and provided correct responses in most questions, including essay-type questions.
- Some candidates struggled to explain key concepts in relation to given situations, such as entrepreneurship.

Competencies (skills) exhibited by Average performers.

- Many candidates lacked knowledge in the subject matter, leading to insufficient responses in section B and incomplete essays in section C. For example, in Section C Question 1, candidates were unable to provide positive impacts of local government due to not understanding the word "impact."
- Some candidates provided correct responses in section B but with fewer points.
- Candidates struggled with presenting written answers in a logical manner, resulting in incoherent and scanty essays with incomplete key parts such as introduction and main body.
- Candidates were able to partially develop some points in the essay questions of section C but did not fully address all aspects.
- Candidates struggled with interpreting the table in Section B Q1 (a) and an extract of a "Will" in Section B Q4, with some questions left unanswered.
- Many candidates did not complete the work, leaving some questions unanswered, especially in the semi-structured section B and essay section C.

Competencies (skills) exhibited by Low performers.

- Sections B and C had numerous blank spaces in candidate responses.
- Essay answers in section C were not well-organized, lacking coherent flow and limited in some cases.
- Difficulty in interpreting the Table in section B Q1 and an extract in section B Q4.
- Poor writing skills in section C, with candidates using point form and providing scanty details.
- Misunderstanding of concepts, such as vote protection and election rigging in section B Q2 and failure to understand the relationship between foreign exchange and foreign investment in Section C Q5.
- Misinterpretation of questions, with some candidates failing to identify malpractices that could lead to the nullification of election results in section C Q3(b) and only providing negative effects when describing the impact of Local Government in section C Q1(a).

Recommendations

Teachers are recommended to discourage learners from writing in bullet form. Learners should be encouraged to explain key concepts clearly and in full. They should present some topics using a variety of approaches, including field trips, and explain the advantages and disadvantages of village banking initiatives. Teachers are advised to utilise the syllabus as the main document when planning lessons and not only textbooks. Further, teachers are encouraged to be resourceful and simplify key concepts or words that may be otherwise difficult to learners. Additionally, teachers should explain the concepts embedded in essay questions or topics and guide learners on the application, analysis, and evaluation skills. Finally, learners should be taught how to write essays in the correct manner rather than in bullet points.

3.2.2 History (2167)

The purpose of assessing learners in History is to gauge their comprehension of the historical progress of mankind. This is intended to help learners appreciate current events and have an informed view of where society is headed in the future.

Analysis of Performance

The following History Paper 1 questions were poorly answered by candidates.

Section A:

- Question 1(b)(v): Candidates struggled to mention the winter and summer capital for the Litunga.
- Question 1(c)(iii): Candidates failed to name David Livingstone's friend who accompanied him in 1851 during his visit to Inyati.

Section B:

- Question 2(a)(i): Candidates identified the economic activity of the Khoikhoi but failed to link it to how it benefited them. Some were also unable to mention the social factors indicating a good relationship between the San and Khoikhoi.

Section C:

- Question 2: Candidates were expected to give an account of the activities of European hunters and traders in Central Africa in the mid-19th century. Only a few candidates attempted the question and did not perform well. Candidates were required to analyze the activities of hunters and traders such as Frederick Selous, George Cobb Westbeech, Edward Chapman, Jacob Hartley, Thomas Baines, and Viljoen Mauch.

Section D:

- Question 1: Candidates were supposed to describe the reasons and course of the conflicts (Kaffir wars) between the Boers and the Bantu between 1779 and 1803. Few attempted the question and did not perform well.

- Question 3: Candidates were supposed to outline and explain proposals made by Sir George and Lord Carnavon in bringing about the Federation of South Africa and explain why they both failed. Many avoided the question, but a few who attempted it from mission schools scored high marks.

The following History Paper 1 questions were well answered by candidates.

Section A:

- Question 1(a) on the Bantu Migration into Central Africa was well answered by most candidates.
- Question 1(b) on Centralised Societies of Central Africa was well answered, except for sub-question (v) where candidates had difficulty mentioning the two capitals for the Litunga.
- Question 1(c) on Opening up Central Africa by Europeans was familiar to candidates and generally well answered, except for sub-question (iii) where they failed to name David Livingstone's companion on his visit to Linyati.

Section B:

- Question 2(a) on Earlier Inhabitants of Southern Africa was generally well answered, but many candidates failed to identify the economic activities of the Khoikhoi and how they benefited from them.
- Question 2(b) on the Great Trek was well understood and answered by most candidates.
- Question 2(c) on Bantu Migrations into Southern Africa was answered well, especially by candidates from mission schools and grant-aided schools.

Section C:

- Question 1 on Bantu Migrations into Central Africa was the most popular question and well answered by most candidates.
- Question 3 on the Ndebele War of 1893 was attempted by many candidates, but some did not answer all parts of the question.

- Question 4 on the Federation of Rhodesia and Nyasaland was the second most popular question and generally well answered, although some candidates mistook factors for causes.

Section D:

- Question 2 on the Mfecane was the most popular and well-written essay question, with candidates scoring high marks.
- Question 4 on African Resistance to White Domination and the Rise of African Nationalism was the second most popular essay question and generally well answered, with candidates fully developing their points.

The following History Paper 2 questions were poorly answered by candidates.

- Q2(a). Topic: Race Relationship in Southern Africa: Sub-Topic: African Resistance to White Domination and the Rise of African Nationalism. Candidates performed poorly in answering this question, even the high-performing candidates struggled. Many did not attempt it or did not do well. Candidates are advised to study this topic widely to answer questions without difficulties.
- Q2(b) Topic: Other International Organisations; Sub-Topic: The Commonwealth of Nations. Candidates were expected to interpret the map of the organization and answer the questions appropriately. Some candidates failed to interpret the map and identify correct answers. This was also true for Q2 (c) on the map of the War of Yom Kippur. Candidates should study and analyze map work carefully and interpret them accordingly using the key.

Section C:

- Q 3. Topic: The World during the Inter-War Era. Sub-Topic: The end of the First World War and the Treaty of Versailles. Candidates were required to state all territorial losses Germany suffered at the Treaty of Versailles and explain why she resented the Treaty. Candidates lost marks as they only stated losses in

Europe and not in Africa and the Pacific. Candidates should answer all parts of the question, including territories lost in Africa and the Pacific, to earn more marks.

The following History Paper 2 questions were well answered by candidates.

Section A:

- Q1 (a) Topic: First World War. Many candidates did very well and were able to relate the questions with what was taught and answered accordingly.
- Q1 (b) Topic: Paris Peace Conference. It was well answered by many candidates especially in mission and Grant Aided schools.
- Q 1(c) Topic: The Rise of Adolf Hitler. Many candidates answered the questions correctly and were able to apply the knowledge learnt in answering questions.

Section C:

- Q 1. Topic: Nation Building. Sub-Topic: Bismarck and The Unification of Germany, 1870. It was a popular question and the majority brought out many points on all the parts and fully developed them hence performance was exceptionally good.
- Q2, Topic: Nation Building 1850-1900. Sub-Topic: The British Splendid Isolation Policy. This was a popular question, and all the parts were adequately tackled.

Section D:

- Q1 Topic: The United Nations Organization (UNO). The question was on the purpose of United Nations and a description of some of its organs. It was one of the most popular questions which was correctly answered and highly scored by most candidates.

Competencies (skills) exhibited by High performers:

- Good essay writing skills and a fair command of the English language.
- Adherence to instructions and the demands of the questions.

- Good paragraphing skills and in-depth knowledge of the subject matter.
- Well-articulated explanations of historical facts.
- Balanced answering of questions in all sections.
- Outstanding comprehension of the questions and answering according to their demands.
- Ability to expand their points with clarifications, definitions, and examples.
- Ability to interpret maps, passages, and pictures.
- The ability to explain and define terms correctly.
- Proper punctuation and spelling.

Competencies (skills) exhibited by Average performers:

- Gaps in answering questions and failure to fully develop points.
- Relatively poor writing skills with grammatical and spelling errors.
- Lack of clarity in expanding points to demonstrate thorough knowledge.
- Scanty knowledge of the subject matter and usage of the English language.

Competencies (skills) exhibited by Low performers:

- Inadequate selection of essay questions in sections C and D.
- Failure to answer some sections of the question, such as Q3 in section C on territorial losses suffered by Germany at the Treaty of Versailles.
- Writing out of context, such as in section C question 1, where candidates wrote about the way of life of the San people instead of the Bantu-speaking people.
- Failure to attempt the entire question, leaving blank spaces.
- Poor recall skills when answering questions based on passages or pictures.
- Inability to construct coherent essays with an introduction, main body, and conclusion.
- Poor handwriting, paragraphing, and spelling skills.
- Limited knowledge of historical facts, leading to generalized and scanty answers.
- Inability to logically raise points to the expected number of marks.
- Inability to interpret maps, such as in section D question 2(b) on the Commonwealth of Nations.

Observations:

- Several questions were avoided by candidates in the History exam, such as Q2 in Section D of History Paper 2, which asked to account for challenges faced by Independent African countries, and Q3 in Section D, which asked to explain Mao Zedong's problems and successes in the People's Republic of China.
- Questions related to earlier topics in the syllabus were generally answered better.
- Teachers tend to avoid teaching topics after 1945 in History Paper 2.
- Performance in Sections A and B was generally better than in Sections C and D.
- Lack of in-depth teaching was reflected in candidates' choice of questions and responses.
- Literacy and comprehension levels were low, and many candidates had limited knowledge of historical facts and lacked essay writing skills.

Recommendations:

- Teachers should use teaching aids, such as maps, to aid in discussions and learning.
- Frequent revision of past papers should be done to help pupils adhere to instructions.
- Subject associations and inner-house seminars can help teachers improve their lesson delivery.
- Teachers should focus on drilling candidates in essay writing skills, give homework, and provide feedback.
- Schools should invest in good textbooks, as the revised format requires extensive teaching during lesson presentations in both papers.
- Teachers should be encouraged to read widely from different books, plan, monitor, and evaluate their work on a daily basis.
- Teachers should effectively interpret maps, graphs, statistical data, diagrams, charts, pictures, and passages.
- Selective teaching of topics should be avoided, and teachers should search for more materials from various sources.

- Continuous Professional Development (CPD) opportunities should be enhanced.

3.2.3 Geography (2218)

Assessment Objectives

Geography aims to measure the understanding of the physical, Social, cultural, economic and their impact on spatial patterns. Candidates are expected to demonstrate the ability to identify, understand, apply, evaluate, and synthesize information.

Analysis of Performance – (Geography Paper 1)

Section A – Map Reading

Candidates were expected to identify and interpret various physical features in map reading. Overall performance in this area was slightly below average. Approximately 37.6 percent of the learners performed well in this area. Challenges encountered by learners include:

1. Failure to read the six-figure grid reference accurately.
2. Inability to measure distance of features such as rivers.
3. Measurement of direction and bearing.
4. Interpretation of the various physical features in line with the key on the map.
5. Failure to read convention symbols in relation to actual features on the map.

Overall, candidates demonstrated a lack of ability to identify, interpret, locate, measure, and read the map. It is recommended that teachers take a more practical approach to teaching map reading. There should be a detailed focus on teaching symbols, signs, and conventions so that learners can better understand what is represented on maps. Additionally, there should be a greater emphasis on teaching the six-figure grid reference.

Section B – Elements of Physical Geography

In this section, candidates were assessed on among others their understanding of earth movements, landforms, and climatic patterns. Diagrams, maps, and tables accompanied some of the questions.

General Performance

- Candidates demonstrated a solid understanding of the questions and were able to answer related questions.
- The analysis suggests that a significant number of candidates were unable to handle the question on time calculation.
- On earth movements and landforms, candidates struggled to provide satisfactory answers, particularly when diagrams were involved. The proportion of candidates who were able to answer such questions correctly ranged between 14 and 31 percent.
- Similarly, candidates struggled with questions related rainfall, temperature climate and climatic regions.

Section C - Elements of World Human Geography

The topics covered in this section includes, agriculture, population, and energy. Approximately 40 percent of the candidates were able to answer the questions in this section correctly.

- Overall candidates exhibited challenges in answering questions related to population and agriculture particularly question that required studying bar graphs, graphs and maps.
- Candidates on the other hand were found to perform better on questions that did not require use of maps or graphs particularly those that demanded lower skill levels.
- It is recommended that teachers consider the following:
    i. The teaching of physical geography should include clearly drawn representations i.e diagrams. This will enable candidates to easily identify regions, towns, and the political and geographical distribution of

populations and economic elements, as they will have been exposed to maps and map reading skills.

ii. In addition to exposing learners to lower level skills, teachers should ensure that learners are exposed to higher order ones of application, evaluation and synthesis.

Analysis of Performance – (Geography Paper 2)

Section A – Zambia

Candidates were required to locate places on the map as part of this question.

- The candidates were unable to correctly name and identify features on the maps. In some instances, some candidates provided names of features that were not located in the provided map.
- Low-performing candidates demonstrated poor understanding of the question, as evidenced by their writing style and the quality of information provided in their answers.
- Very few candidates explained correctly steps taken by the Zambian government in promoting tourism.
- Low-performing candidates struggled to provide an accurate definition of the manufacturing industry and explanation of processes. The question required candidates to elaborate on both the social and economic benefits that the industry
- Most candidates answered correctly questions on forestry.
- High-performing candidates excelled in this section, successfully sketching the map, and marking the named areas. The question was quite intricate and required the candidate to distinguish between the North and South bank locations, thus necessitating knowledge on this subject matter.
- Most low-performing candidates submitted incomplete answers. This made them lose marks as they did not meet the requirements for the award of full marks.

Section B – The Sub Region

- It was observed that candidates had difficulties providing answers to the questions in this section.
- Candidates were required to name the marked areas on the map, but some of them simply repeated the names that were already provided on the map to help them identify the marked locations. This suggests a poor understanding of the map.
- Candidates were unable to list the disadvantages of being landlocked.
- Fewer candidates attempted to answer the question focused on mining in South Africa. This may suggest that candidates lacked knowledge of both map reading and South Africa as a whole, possibly indicating that they had not been taught this topic.
- Most candidates were expected to successfully state the steps of fractional distillation, and in most cases, this was accomplished.
- The higher-performing candidates provided a thorough outline of tobacco processing in Malawi. However, the low performer misunderstood the question and discussed low fertility soils, which may be attributed to lower levels of literacy.

Section C – Settlement and Population Studies

- Most candidates successfully identified the settlement patterns and other features presented in the diagram. The question required candidates to read and interpret a map/picture in order to provide the required responses.
- Most candidates answered the question on high population on the Copperbelt.
- Candidates were found to have not understood the question regarding the Luangwa valley.

Competencies (skills) exhibited by High performers:

- The high performing candidates achieved excellent results. They demonstrated good knowledge and accuracy in answering the questions, but in some cases lost marks for having not qualified their answers. For instance, when asked about the benefits of tourism, simply stating "provides employment" without giving

specific examples such as game guards, chefs, or drivers would not earn full marks.

- High performers were able to **identify** and **interpret** features on the maps; as well as sketching and **locating** indicated features.
- The candidates displayed skills of knowledge, recall and application successfully, indicating ability to **comprehend** information and use it effectively.

Competencies (skills) exhibited by Average performers:

- The candidates displayed some level of knowledge on topics examined.
- The challenge with this category was failure to provide complete answers. Another challenge was that of not being able to recall information, thus, exhibiting in comprehending and applying information.
- In maps, candidates displayed challenges in **distinguishing** and **location** of features.

Competencies (skills) exhibited by Low performers:

- Candidates in this category did not understand most of the questions.
- In other cases, candidates could not just **recall** information previously learnt.
- Others wrote anything in line or similar to the topic. Where a candidate tries to give a definition of manufacturing industry and yet the question is asking about the contribution of manufacturing industries to the economy.
- Candidates could not **locate, interpret** and **name** the given features on a map.

3.2.4 Religious Education (2044)

Assessment Objectives

The Christian Religious Education 2044 syllabus evaluates spiritual, moral, religious, and cultural values and behaviour, as drawn from four main religious traditions in Zambia. These traditions include Christianity, Hinduism, Indigenous Zambian beliefs, and Islam. The syllabus expects candidates to demonstrate their ability to identify, understand, apply, analyse, evaluate, and synthesize knowledge in a variety of topics.

Analysis of Performance

Characteristics of High performing candidates

- They were able to narrate the Bible passages correctly and coherently, as demanded by the questions.
- They followed instructions very well and understood the questions, providing correct responses.
- Most of them expressed themselves very well in good English, with good sentence construction and correct spellings.
- They demonstrated a strong understanding of the subject matter and answered all questions well.
- They provided many relevant points.

Characteristics of Average performing candidates

- They had some understanding of the questions.
- They failed to bring out complete answers and had little knowledge of the subject matter.
- They were able to write the Bible passages correctly, but not exhaustively or coherently.
- Their answers on the application of Bible passages to real-life situations were inadequate.
- They did not perform well in part b (ii).

Characteristics of Low performing candidates

- They had difficulties in understanding the questions and lacked knowledge in the subject matter.
- Some candidates simply copied the questions to fill up answer booklets.
- Their use of language was extremely poor, with wrong spellings and poor sentence construction.
- They could not present a coherent Bible passage, as required by the question.
- Their application of the Bible passage was also very poor.

Recommendations:

- Teachers should revise past papers with learners to help them better understand the questions.
- The Ministry of General Education should enhance provision of teaching and learning materials to improve the quality of education provided to learners.
- Schools should obtain copies of the revised RE 2044 syllabus and ensure that teachers use the current syllabus for teaching.

3.2.5 Religious Education (2046)

Assessment Objectives

The Christian Religious Education 2046 syllabus aims to evaluate candidates' knowledge of spiritual, moral, religious, and cultural values and behaviours from the four main religious traditions in Zambia. These traditions include Christianity, Hinduism, Indigenous Zambian beliefs, and Islam. The syllabus covers various topics such as Jesus' attitude towards people, the last supper and crucifixion, the kingdom of God, opposition to Jesus, and Christian attitudes towards work, state, money, and possessions. Candidates are expected to demonstrate their ability to identify, understand, comprehend, analyse, evaluate, and synthesize information within these topics.

Analysis of Performance

Characteristics of High performing candidates

The candidates exhibited the following positive traits:

- They accurately interpreted the questions.
- They demonstrated a deep understanding and mastery of the subject matter.
- They were able to recall and comprehend the Bible passages, as well as articulate the spiritual and moral values.
- They skilfully applied positive values from the Bible to everyday life, and compared them with related values from other religions.

- They had a wealth of information on the subject matter, allowing them to provide correct responses.
- They used language effectively, with well-constructed sentences and correct spelling.

Characteristics of Average Performing Candidates

- The candidates had fair interpretation of the questions.
- Their knowledge of the subject matter was limited resulting in partial or inadequate responses.
- While some of them provided some correct answers, others mixed up their points.
- Some candidates failed to properly narrate the Bible passages.
- Their work presentation was good with neat and clean handwriting.
- Some scripts contained wrong spellings and limited language usage.

Characteristics of Low Performing Candidates

The candidates in this category showed the following characteristics:

- Little or no knowledge of the subject matter.
- Candidates did not follow the instructions as stated in the rubrics, by either answering all questions or providing fewer answers than required.
- Direct copying of the questions on the answer booklet was frequent.
- Poor language usage, as candidates could hardly construct a sentence.
- Failed to narrate the Bible passages and sometimes mixed them with related ones.
- Failed to compare the Bible values with those in other religions.
- The candidates had poor work presentation, with handwriting that was often unreadable and the excessive use of rubbing and cancellation.

Recommendations

- The Ministry of Education should enhance distribution of copies of the revised syllabuses to all the schools which have not yet received.
- The Ministry of Education should enhance provision of teaching and learning materials based on the revised curriculum to all schools.

- Teachers should be revising the past papers with the learners so that they understand and get used to the format of the examinations and learn how to answer the questions.

3.3 Business Studies

Business Studies comprises Commerce (7100) and Principles of Accounts (7110).

3.3.1 Commerce (7100)

Assessment Objectives in Commerce

To assess learners in both academic and entrepreneurship skills against basic knowledge in home trade, international activities, stock exchange and the procedures and documents used in the day-to-day conduct of the business in commercial institutions. It is also used for certification at O level.

Analysis of Performance

Candidates performed well on questions in Section B, particularly in C Question 4 (a) on Advertising and C Question 4 (b) on Road Transport.

In contrast, candidates struggled with the poorly performed questions. These included Section A Question 11 on Vessels used in transportation, Section A Question 12 on Documents Used in Trade, and Section A Question 13 on Banking.

Furthermore, Section C also presented challenges for candidates. Specifically, they struggled with the Detailed outlined in the Articles of Association in Question 3(a) and Question 5 on Banking and Insurance.

Characteristics of High Performing candidates

Candidates in this category exhibited the competencies:

- The answers were expressed in a clear and well-explained manner.
- The work was presented in a tidy manner.
- The written information was organized and flowed logically.
- The candidates demonstrated a high level of analytical and factual application through their use of examples in their answers.

Characteristics of Average Performing candidates

- The work was presented in a fairly neat and logically organized manner.
- Some parts of the question were left unanswered.
- While candidates could answer questions related to knowledge well, they struggled to tackle questions at the higher level of application.
- Concepts were not fully explained, indicating a lack of thoroughness.

Characteristics of Low Performing candidates

- Answers were poorly presented.
- Questions were poorly understood and answered by the candidates.
- Some questions were not answered.

3.3.2 Principles of Accounts (7110)

Assessment Objectives

This assessment aims to evaluate learners on their fundamental knowledge and practical skills related to financial transactions and management, which are crucial for making economic decisions and generating reports in the business sector, whether for personal or professional purposes. The assessment also facilitates certification and placement.

Specifically, the assessment evaluates learners' grasp of bookkeeping and principles of accounts, their understanding of final accounts, their familiarity with ethical considerations in accountancy, and their ability to interpret final accounts.

Analysis of Performance

Questions that were well answered by candidates included theory questions on source documents such as 1a, 1b, 1c, and 1d. Question 2a, which involved identifying appropriate ledgers for various accounts given, was also well answered. Additionally, candidates demonstrated a good understanding of appreciating accounts, with several candidates providing strong examples in response to question 2c.

Questions that were poorly answered by the candidates included question 2b, which required the preparation of the Rent Account and Commission Received Account. Similarly, question 3A iii, which focused on the Adjusted Cash book and Bank Reconciliation, presented challenges to the candidates. Finally, question 4, which featured incomplete accounts, also received poor responses from the candidates.

Characteristics of high performing candidates

Candidates in this category exhibited the following characteristics.

- Demonstrated a proficient understanding of the subject matter.
- Presented the work in a clear and systematic manner.
- Followed instructions accurately and demonstrated comprehension of them.
- Posted the entries correctly without errors.

Characteristics of average performing candidates

Candidates in this category exhibited the following characteristics.

- Some candidates demonstrated limited knowledge of the subject matter in their responses to certain questions.
- In certain questions, candidates applied incorrect principles by assigning certain items to the wrong accounts and/or ledgers.
- Some transactions were not posted correctly in the appropriate ledgers by the candidates.

Characteristics of low performing candidates

Candidates in this category exhibited the following characteristics.

- Demonstrated insufficient knowledge of the subject matter.
- Candidates were unable to apply the appropriate principles of double entry in the ledger accounts or journal proper.
- Accounts were poorly titled, and some transaction dates were mixed up by the candidates.
- Candidates failed to apply basic principles of final accounts.

Recommendations

- It is recommended to provide learners with more opportunities to engage in practical work to help build their confidence. Practical work should be incorporated into the teaching in a way that complements theoretical learning. This can include case studies, simulations, and group activities that simulate real-life accounting scenarios.
- There should be an emphasis on teaching the basic principles of accounting, including the double entry system, following chronological order when adjusting entries, and other fundamental concepts. This will help to establish a strong foundation upon which more complex accounting principles can be built. In addition, teachers should ensure that learners are able to apply these principles in practical scenarios.
- It is important to cover all the content in the syllabus to ensure that learners have a comprehensive understanding of accounting principles and concepts. Teachers should make sure that they teach all topics thoroughly and provide learners with opportunities to practice what they have learned.
- Continuous Professional Development (CPD) is crucial for teachers to keep up to date with developments in accounting and to refine their teaching skills. Teachers should be encouraged to attend relevant workshops, seminars, and training sessions to enhance their knowledge and skills. This will ultimately benefit the learners, as the teachers will be better equipped to deliver high-quality accounting education. Schools should therefore ensure that all teachers undergo regular CPD training.

3.4 Mathematics and Natural Sciences

The subjects in this category include Mathematics, Additional Mathematics, Computer Studies, Physical Sciences (Physics, Chemistry & Science) and Biological Sciences (Agricultural Science & Biology).

3.4.1 Mathematics

The purpose of the Grade 12 Mathematics assessment is to measure learner achievements against the set competencies as outlined in the O-level Mathematics syllabus Grade 10-12.

Assessment Objectives

Candidates were tested against the following objectives**:**

AO1 Knowledge and Understanding

- Recognise appropriate mathematical procedures for a given situation.
- Estimate, approximate and use appropriate degrees of accuracy.
- Understand and use mathematical language and symbols.

AO2 Application and Problem Solving

- Use the common systems of units; (e.g., metres, seconds, degrees)
- Perform calculations by suitable methods, with and without a calculator.
- Apply mathematical concepts and skills in a variety of situations, including daily life.
- Recognise and apply relationships in two- and three-dimensional shapes.
- Express given word problems into mathematical terms and apply appropriate techniques of solutions.
- Apply the knowledge of computer algorithms to various problem-solving situations.
- Use of geometrical instruments to draw diagrams.

AO3 Analysis and Evaluation

- Present, interpret and use information in written, graphical, diagrammatic and tabular forms.

- Present mathematical arguments in a logical and clear fashion
- Form generalisations after recognising patterns and structures in a variety of situations.

Analysis of Performance

Candidates demonstrated a better understanding of topics such as quadratic equations, Arithmetic Progression, matrices variation, sets, vector geometry, pseudocode, construction and loci, trigonometry (cosine rule and area of triangles), statistics, earth geometry (distance along longitudes and latitudes), and transformation (rotation and enlargement). However, there were areas where candidates struggled. These included; sets, social and commercial rithmetic, approximations, similarity, symmetry in solids involving the axis of symmetry, pseudocode in computer, mensuration (area of a sector), coordinate geometry (midpoint of two points), functions (inverse and composite functions), travel graphs (calculation of the average speed for the whole journey), vectors (collinearity), calculus (definite integrals and equation of the normal to a curve), statistics (using the graph to estimate the semi-interquartile range), and transformation (stretch).

In addition to presenting characteristics of different levels of performance, Question 6, a section A compulsory question in Mathematics Paper 2, which focused on definite integrals and the equation of the normal to a curve, was used to demonstrate candidates' performance according to the three categories of high, average and, low performance. The question was as follows.

6. *(a) Evaluate* $\int_{-1}^{4}(2 + 2x + 6x^2)\,dx$. *(3)*

(b) Find the equation of the normal to the curve $y = x^2 - 3x - 4$ *at the point (2 -6).* *(3)*

Characteristics of High Performing Candidates

Candidates who performed well demonstrated the following traits:

- Demonstrated mastery of most concepts on the topics.

- Displayed clear understanding of different mathematical terms.
- Interpreted word problems correctly.
- Mastered the prerequisites to a given topic and applied them correctly.
- Applied formulae on different topics correctly.
- Understood how to draw graphs using correct scales.
- Used the calculator correctly on problems requiring its use.
- Interpreted graphs correctly in solving problems.
- Rounded off numbers accurately at the correct stage in the solution of problems.
- Showed essential working in finding solutions to problems.
- Used mathematical instruments correctly in construction questions.
- Presentation of work was very good and accurate.

Candidates who performed well in mathematics were able to provide accurate solutions for question 6, which required them to apply their understanding of integration, definite integrals, and finding the equation of the normal to a curve. These high-performing candidates were able to obtain full marks for this question.

In part (a) of the question:

- Candidates interpreted the word "evaluate" and the symbol for integration correctly.
- They understood and applied the rules of integrating terms of integer powers and their sum.
- Candidates correctly interpreted the definite integral.
- They had a good mastery of the prerequisite knowledge of substituting values and simplifying correctly.
- Correct notation was used in finding the definite integral.

In part (b) of the question:

- Candidates understood that to find the equation of the normal, the gradient of the curve at the given point was needed.
- They found the gradient by applying differentiation.

- Candidates understood that the equation of the normal is perpendicular to the tangent to the curve at the given point.
- They understood the concept that the product of the gradients for perpendicular lines is -1.
- Candidates applied the concept of one-point gradient or the form $y = mx + c$ to find the equation of the normal to the curve.
- All the necessary steps and calculations were shown clearly.
- Candidates earned full marks.

Characteristics of Average Performing Candidates

Candidates with average performance exhibited the following characteristics:

- The candidates had a partial understanding of some concepts on the topics.
- They were able to interpret some parts of word problems correctly.
- The application of formulae on different topics was done correctly in some cases.
- They applied the prerequisites to some topics correctly, but not to all.
- They understood how to draw graphs, but in some cases, interchanged axes, used the wrong scales, or drew graphs that were not smooth.
- Demonstrated knowledge of the use of a calculator but did not show working explicitly on paper in some cases.
- They correctly interpreted some parts of graphical questions.
- There was premature rounding-off of answers.
- Omission of essential working on some topics.
- They used mathematical instruments correctly but not accurately.
- The presentation of the work was not very good.

Average performing candidates were able to correctly answer some parts of question 6 on integration (definite integrals and equation of the normal to a curve) but did not earn full marks.

On part (a):

- Lack of mastery of all the concepts in part (a) of the question was observed.

- Could not interpret part (a) of the question correctly.
- They did not understand and interpret the word "evaluate" and the symbol for integration correctly.
- They did not understand and apply the rules of integrating terms of integer powers and their sum.
- Could not correctly interpret the definite integral.
- Application of the prerequisite knowledge of substituting values and simplifying correctly was a challenge.
- They did not use the correct notation in finding the definite integral.
- Earned no marks for this part of the question.

On part (b):

- They only interpreted part (b) of the question correctly.
- Understood that to find the equation of the normal the gradient of the curve at the given point was needed.
- Gradient was found by applying differentiation.
- Understood that the equation of the normal is perpendicular to the tangent to the curve at the given point.
- Understood the concept that the product of the gradients for perpendicular lines is -1.
- Applied the concept of one-point gradient form or the form $y = mx + c$ to find the equation of the normal to the curve.
- All the necessary steps and calculations were shown clearly.
- Earned marks for this part of the question only.

Characteristics of low performing candidates

Candidates with low performance had the following characteristics:

- Most concepts on the topics were not mastered.
- Most of the word problems were not interpreted correctly.

- Difficulty in applying formulae, including the ones provided in the question paper.
- Incorrectly drawn graphs, including the use of wrong scales and interchanging of axes, or graphs not being smooth.
- Difficulty in using the calculator correctly for problems requiring its use.
- Difficulty in interpreting graphical questions.
- Premature rounding off answers.
- Omission of essential working on most of the topics.
- Difficulty in using mathematical instruments correctly, sometimes resorting to freehand drawing in construction questions.
- Poor presentation of work, sometimes including challenges in numbering their responses.

Low performing candidates were unable to answer correctly question 6 on integration (definite integrals) and differentiation (equation of normal to the curve).

- Lacked mastery of integration and differentiation concepts.
- Failed to understand and interpret the word "evaluate" and the symbol for integration correctly.
- Could not apply the rules of integrating terms of integer powers and their sum correctly.
- Could not interpret the definite integral correctly.
- Lacked mastery of the prerequisites of substituting values and simplifying correctly.
- Did not use the correct notation in finding the definite integral.
- Did not have the concepts of finding the normal to a curve at a given point.
- Failed to interpret the question on part (b) correctly, which prevented them from applying differentiation to find the gradient to the curve at the given point.
- Did not understand that the equation of the normal is perpendicular to the tangent to the curve at the given point.
- Lacked understanding of the concept of the product of gradients for perpendicular lines, which is -1.

- Could not apply the concept of one-point gradient form or the form y = mx + c to find the equation of the normal to the curve.
- Did not attempt some parts of the question in some cases.
- Presentation of work was not clear.

General Challenges

- Most candidates struggled with new topics such as calculus (integration and differentiation) and computers (pseudo code).
- Some candidates faced challenges with the use of geometrical instruments in construction and loci topics, resorting to free-hand drawing.
- Understanding word problems and interpreting questions involving diagrams was difficult for some candidates.
- Some candidates had difficulty applying formulae, including those provided in the question paper.
- Drawing graphs with wrong scales, incorrect labeling of axes, and interchanging axes were problematic for some candidates.
- Omitting essential working, especially in Mathematics Paper 1, was observed.
- Incorrect use of a calculator in Mathematics Paper 2 was also noted, as some candidates found solutions directly on the calculator without showing working on the answer paper.
- Chief Examiners have reported recurring challenges in certain topics, including calculus, mensuration, and transformations.

3.4.2 Additional Mathematics

The purpose of the Additional Mathematics assessments is to measure learner achievements against the set competencies as outlined in the Additional Mathematics Grade 10 to 12 Syllabus.

Assessment objectives

Candidates were tested against the following assessment objectives:

AO1 Knowledge and Comprehension

- Understand mathematical terminologies such as solve, find, estimate, prove, calculate, express, expand, sketch, determine, interpret, differentiate, and integrate.
- Understand and interpret mathematical symbols such as $\int$, π, $|$, $\frac{dy}{dx}$
- Understand and interpret mathematical notations such as $\Rightarrow$, $\Leftrightarrow$, $f(x), AB, \hat{a},$ and a.

AO2 Application

- Recall and use mathematical formulae such as $s = r\theta$, $\binom{n}{r} = \frac{n!}{(n-r)!r!}$, and $m = \frac{y_2 - y_1}{x_2 - x_1}$.
- Identify and use correctly mathematical formulae provided in the question paper.
- Use the appropriate mathematical procedure for a situation.
- Apply and interpret mathematical concepts and skills in a variety of situations including real life.

AO3 Analysis

- Analyze and interpret tabular, graphical, word and geometrical problems and solve these problems using related mathematical concepts and skills.

AO4 Synthesis and Evaluation

- Recognize patterns and structures in a variety of situations and form generalizations.
- Express given problems in mathematical terms and solve them using appropriate techniques.

Analysis of Performance

Candidates performed better on topics such as functions, trigonometric functions (trigonometric identities), quadratic functions, differentiation (small increments, quotient rule, application of the derived function, stationary points, maximum and minimum points), vectors (vector equations), systems of equations,

remainder and factor theorems, permutations and combinations, and statistics (standard deviation). However, they showed average performance in topics such as circular measure (arc length and area of a sector), binomial theorem, definite integrals, and coordinate geometry (equation of a straight line and areas of rectilinear figures). Topics like logarithmic functions, integration, and sketching of graphs of exponential functions had low performance. Question 3 in Additional Mathematics Paper 2 on logarithmic functions was used to demonstrate the performance of candidates according to the three categories. Question 3 was as follows;

3. Solve the equations

(a) $5^y = 10$,

(b) $2log_2 + 2 = log_2(2x + 5)$

Characteristics of High Performing Candidates

High-performing candidates demonstrated the following characteristics:

- Mastery of most of the concepts on the topics.
- Understanding and correct interpretation of mathematical terms, symbols, and notation.
- Correct analysis of word problems and use of mathematical concepts and skills to solve them.
- Express correctly given problems in mathematical terms and solving them using appropriate techniques.
- Use of correct formulae and theorems in solving questions.
- Correct use of the calculator.
- Enhanced manipulative skills in answering questions.
- High level of computational skills in dealing with steps of solutions
- Logical presentation of solutions

- Good presentation of solutions
- High level of analytical skills
- Sufficient supply of working that enabled them to earn maximum marks for most questions.
- Presentation of work was very good and with high degree of accuracy in the answers.

High performing candidates were able to answer correctly question 3 on logarithmic functions and earned full marks.

- Correct interpretation of both part (a) and (b) of the question.
- Accurate application of laws of indices and logarithms to solve part (a) correctly.
- Mastery of laws of indices and logarithms and their application in the solution of the question.
- Accurate application of the concepts of laws of logarithms and solution of quadratic equations in solving the logarithmic equations.
- Correct use of the calculator in finding the solution.
- Accurate application of the quadratic formula to find the value of x.
- Displayed all essential working, thus earning full marks.
- The presentation of their work was accurate and well-done.

Characteristics of Average Performing Candidates

Candidates with average performance displayed the following characteristics:

- Had partial mastery of the concepts in some of the topics.
- Correctly understood and interpreted some mathematical terms, symbols, and notation.
- Analyzed and solved some word problems correctly using mathematical concepts and skills.
- Expressed some problems in mathematical terms and solved them appropriately.
- Correctly used some formulae and theorems to solve some questions.

- Showed some analytical skills in some questions.
- Essential working was shown in some questions, enabling them to earn some marks.
- Work presentation was good and accurate in some cases, with some degree of accuracy in the answers.

Average *performing candidates were not able to answer correctly both parts of question 3 on logarithmic functions and did not earn full marks.*

- Did not have masterly of all the concepts on logarithmic functions.
- They interpreted part (a) only of the question correctly.
- They applied some of the laws of logarithms to solve part (a) correctly.
- Used the calculator correctly in finding the solution to part (a) only.
- Did not understand all the concepts of finding part (b).
- They could not apply the concepts of the laws of logarithms correctly to obtain a quadratic equation in solving the logarithmic equation in part (b).
- Could not reduce (simplify) the logarithmic function to obtain a quadratic equation in solving part (b) of the question.
- Did not earn all the marks for part (b) of the question.
- Earned method marks in some cases and not accuracy marks.

Characteristics of Low Performing Candidates

- Lacked mastery of most of the concepts on the topics.
- Could not correctly interpret most of the mathematical terms, symbols, and notation.
- Found most word problems challenging and struggled to use mathematical concepts and skills to solve the questions.
- Expressed most problems in mathematical terms incorrectly and failed to use appropriate techniques to solve them.
- Struggled to use correct formulae and theorems in solving the questions.
- Had difficulty presenting solutions logically for most of the questions.

- Did not show all essential working correctly, resulting in losing most of the marks.
- Presentation of work was not good in some cases, and accuracy was a challenge.

Low performing candidates were not able to answer correctly both parts of question 3 on logarithmic functions.

- Had limited understanding of the concepts on logarithmic functions.
- Could not correctly interpret part (a) of the question.
- Failed to use the laws of indices and logarithms to solve part (a).
- Did not fully understand the concepts of part (b) of the question.
- Managed to apply the laws of indices and logarithms to simplify an equation to a quadratic equation in part (b).
- Could not use the concepts of the quadratic formula to solve the logarithmic function in part (b).
- Earned method marks but not accuracy marks in some cases for part (b).
- Did not earn all the marks for part (b) of the question.
- Had unclear presentation of work in some cases.

Challenges faced by candidates in Additional Mathematics

Additional Mathematics has been incorporated into the academic curriculum in most schools following a revision of the curriculum. This course is intended for learners who excel in Ordinary Level Mathematics. Challenging topics from previous years remained problematic as some candidates performed well while others struggled with basic formulae or theorems. Some candidates also made errors by failing to use a calculator to evaluate expressions and, premature rounding of numbers impacted the accuracy of the results.

The following recommendations are proposed to enhance the candidates' performance in Mathematics and Additional Mathematics:

- Teachers should incorporate real-life situations into the introduction of topics where applicable.

- Teaching and learning aids should be improved to facilitate learning.
- Mathematics should be taught with reference to its practicality in real-life scenarios.
- Learners should be encouraged to discover concepts from a practical point of view and be actively involved in their learning process.
- Teachers should make the subject interesting and develop an interest in the learners.
- Prompt feedback should be provided to learners on all given tasks.
- The use of mathematical instruments and calculators should be encouraged on relevant topics.
- Continuous Professional Development (CPD) meetings should be enhanced to enable teachers to share best practices and improve their capacity in teaching challenging topics.

3.4.3 Computer Studies (7010)

The Grade 12 Computer Studies examination aims to assess the candidates' proficiency in the competencies outlined in the Grade 10 to 12 Syllabus. The examination also serves as a certification tool and a means of selecting candidates for tertiary education in various fields, including computer programming, database administration, network administration, mobile computing, web design, computer security, and forensics.

Assessment Objectives

Candidates will be assessed candidates against the following assessment objectives:

A01 Remembering and Understanding

- Recall and understanding of computer terminologies and the general theory of the basic computer system.
- Recall of facts on computer hardware and other microprocessor-controlled devices used in everyday life.
- Understanding of operating systems and generic application software.
- Recall and understanding of facts on computer networks and security.

- Understanding of the social, economic, and environmental impact of computers on society

A02 Application

- Use a computer to do intermediate practical skills in word processing, spreadsheet, database design and management including systems implementation.
- Apply the understanding and use of emails, the Internet, and social networks.
- Determine an appropriate software solution to solve a given problem e.g. of social, economic and environmental nature.
- Perform basic skills in algorithm design and problem analysis and solving.
- Apply project and research skills to develop appropriate set of algorithms.
- Develop simple programs.

AO3 Analysis

- Determine appropriate system tools (flowcharts, dataflow diagrams, entity relationship diagrams) and algorithms to solve problems.
- Plan, test and evaluate a solution.
- Choose an appropriate implementation method for proposed software solution.
- Apply logical thinking and make connections between topics in Computer Studies and other learning areas.

A04 Synthesis

- Code in a programming language such as Pascal, C++, Visual Basic, HTML Java or Python (Include: assembler, compiler, interpreter from a given set of algorithms.
- Identify and correct errors such as syntax, runtime, and logical errors.
- Use appropriate logic gates used in systems (NAND, OR, AND, NOR gates).

Analysis of Performance

Most candidates scored more correct answers in the theory section (Section A) compared to the practical skills section (Section B), indicating that the topic of Systems Analysis and Programming (Section B) was either not adequately understood or not thoroughly taught. The practical skills section tests higher-order problem-solving and programming skills, but many candidates answered programming questions poorly or skipped them entirely. There was a clear deficiency in candidates' ability to write code in HTML and Pascal, as well as other programming languages outlined in the syllabus.

Examples of poorly answered questions:

Section A

Question 2(b) Convert 1010_2 to Octal.

Candidates were expected to follow the steps below to arrive at the correct answer:

- Convert the binary digits first to decimal system or base 10.
- Convert from base 10 octal or base 8

Most candidates answered this question incorrectly. They gave the answer in base 10 which was leaving the process incomplete resulting in a base 10 number.

Question 3(c) Describe a way of training a robot to do a new task.

The majority of candidates performed poorly on this question, indicating that the application of robotics may not be thoroughly taught in schools.

To achieve full marks, it was necessary to follow these steps:

- Outline/read steps required to do the new task.
- Carry out rehearsals through the steps outlined.

Question 7 Read the following instructions used to command a robot to move.

- Forward 30
- Left 120°
- Forward 30

- Left 120°
- Forward 30
- Left 120°

Write a shortened set of instructions using the REPEAT statement.

Most candidates simply replicated the steps provided in the question without much understanding. However, to arrive at the correct answer, it was necessary to use the REPEAT function in the following way:

Method 1	**Method 2**
REPEAT 3 (or 3 times) Forward 30 Left 120° END	REPEAT Forward 30 Left 120° UNTIL 3 (or 3 times) END

Section B

The practical and problem-solving skills of the candidates are assessed in this section through answering questions related to a given problem scenario and implementing the solutions through a top-down approach, as in question 1. The programming questions that follow (in question 2 and 3), give candidates the option to choose between two given programming languages.

In Question 2(a), candidates were expected to:

- Comprehend the syntax of the Pascal programming language.
- Demonstrate the ability to write simple, fundamental code.

The majority of candidates responded to this question by stating that an integer is a number, and a string is a letter, which was incorrect. Programming languages have strict validation policies, and any invalid inputs would make the program invalid. The correct answer is that an integer is a numerical value, while a string represents a character or a sequence of characters.

Characteristics of high performing candidates

Candidates in high performing category were able to:

- Define terms; explain features, differences, advantages, drawbacks correctly.
- Interpret different numbering systems accurately and carry out inter-base conversions accurately.
- Read and interpret robotic instructions using algorithmic syntax.
- Reading and interpreting algorithms.
- Applying knowledge and understanding of databases
- Apply fact finding techniques in the given scenario and stating correctly the importance of pre-implementation requirements including appropriate changeover.
- Write program code in HTML, or Pascal.

Characteristics of Average performing candidates

Candidates exhibiting average performance were able to:

- State some terms, explain a few reasons on applications but could not state the flow.
- Unable to complete the conversion of binary numbers to octal with difficulties especially bridging from base 10 to base 8.
- Define Computer terms but could not clearly explain processes.
- Use part of the REPEAT… UNTIL structure of pseudocode in robotics but not completely accurate.
- State some stages and a few processes but were unable to apply problem solving skills in solution design, and unable to write program code in HTML, or Pascal

Average performers either scored low or did not attempt the following topics:

- Fact finding techniques and requirements specifications in the System development life cycle.
- Programming in HTML or interpreting Pascal concepts.

Characteristics of low performing candidates

Candidates exhibiting low performance had the following difficulties:

- Could not give features and utilities of the graphical user interface.
- Inability to read and interpret binary numbering systems and octal systems and perform conversion to octal system.
- Inability to use REPEAT… UNTIL structure of pseudocode in robot commands.
- Inability to interpret and apply algorithms.

General Challenges exhibited by candidates.

- Reading and interpreting different numbering systems.
- Interpreting the various parts of a URL.
- Defining terms.
- Explaining the concepts and mechanisms of data processing.
- Interpreting the SDLC and writing program code.

Recommendations

- Grade 10 Computer Studies learners should be taught by more experienced teachers who can provide a strong foundation for the school certificate level.
- Teachers should cover the entire topic on numbering systems and provide ample opportunities for learners to practice conversions.
- Writing algorithms using pseudocode should be thoroughly taught, and learners should be given sufficient time to practice.
- Teachers must ensure that candidates are taught programming languages such as HTML, Pascal, and C++, as well as basic SQL statements for updating, deleting, and requesting information from databases.
- The ECZ should make deliberate interventions to ensure that this feedback reaches its intended audience, the Computer Studies teachers in the classroom, so that learners can benefit from improved answers in final exams.
- The Ministry of Education should provide support and facilitate the growth of CPD-driven interventions to enhance teacher proficiency in programming.

3.4.4 Physical Sciences

Physical Sciences is comprised of Physics, Chemistry, and Science. To thoroughly evaluate knowledge, skills, and values, including those that can't be evaluated through a one-time written exam, these subjects require practical assessments at the school level. Additionally, Science encompasses certain aspects of Physics and Chemistry.

Assessment Objectives

a. knowledge/remembering with understanding;
b. handling information and solving problems;
c. experimental skills and investigations.

3.4.4.1 Chemistry

The purpose of the Chemistry assessment is to measure learners' competencies and achievements as outlined in the Grade 10 to 12 Chemistry syllabus, CDC 2013. The assessment is also used for certification of learners' achievements as well as entry into tertiary institutions and the engagement in Entrepreneurial activities.

Analysis of Performance

Chemistry Paper 1

Paper 1 consisted of 40 compulsory, multiple choice items carrying a total of 40 marks. The mean score in 2022 was 53.12 percent compared to 49.72 percent in 2021 giving an improvement of 3.4 percent. There were no candidates who scored a mark of zero.

Chemistry Paper 2

Paper 2 of the Chemistry examination included two sections: Section A with eight compulsory structured questions worth 50 marks and Section B with four semi-structured/essay questions, from which candidates must choose three. In 2022, the mean score for Paper 2 increased by 5.82 percentage points to 41.93 percent compared to 36.11 percent in 2021. However, seven candidates scored zero.

Chemistry paper 3

Paper 3 was school based; administered by teachers with emphasis on experimental skills and investigations. The mean score in 2022 was 88.1 percent compared to 86.26 in 2021 showing an increase of 1.84. Two (2) candidates scored a mark of zero.

In the Chemistry examination, candidates performed well in the following questions:

- Question A2 on Separation techniques, although most candidates drew poor diagrams and had difficulty differentiating between filtration and decantation.
- Question A4 on the Mole concept, although the calculation part was poorly answered.
- Question A5 on Non-Metals and periodic trends, where the aspect of experimental observations was poorly answered, indicating inadequate or non-existent practical work in School-Based Assessments (SBAs).
- Question A6 on Electricity and chemistry, where candidates struggled to give the correct products of the given electrolysis. Many candidates did not recognize that it was an application of electrolysis in metal extraction, rather than a simple electrolytic cell.
- Question B9 on Metals, which was a popular choice among most candidates, although they faced several challenges that affected their performance. Most candidates calculated the percentage composition of ores instead of copper in the ores, while also struggling with the rules of using capital and small letters in writing formulae and equations. Additionally, many candidates lacked the skills needed to balance equations.

Candidates struggled with the following questions:

- Question A1 on the Particulate nature of matter. While this topic should have been familiar from grade 10, many candidates faced challenges differentiating between the arrangement and motion of particles. Additionally, many candidates responded with 'solids are closely packed' instead of saying

'particles in solids are closely packed,' and incorrectly compared the ionic bond in sodium chloride to the molecular bond in hydrogen chloride.

- Question A7 on the Mole concept and chemical energetics, where most candidates lost marks in the calculation part despite having a good understanding of the question.
- Question A10 on Acids, Bases, and Salts-Titration, which required practical skills from SBAs. Candidates could not show evidence of having done a common practical on titration and failed to provide a suitable indicator or give the colour changes of that particular indicator to distinguish between an acidic and an alkaline solution.
- Question B11 on Non-Metals-Oxygen, which was the most popularly chosen question in Section B. However, most candidates could not recall the correct formula of hydrogen peroxide, which affected the writing of a balanced chemical equation for its decomposition. In graphing, many candidates failed to determine the scale to be used and plotted points as they appeared in the table.
- Question B12 on Organic Chemistry, which was the most unpopular question in Section B. While the reactions in question were basic, most candidates who attempted this question could not provide the necessary conditions for the reaction to take place. Additionally, most candidates could not provide the structures for non-organic compounds in the reaction equations, and their use of terminologies was poor.

An example of a poorly performed question is B9 on the extraction of metals-copper combined with the mole concept. The question was as follows; (i) *Calculate the percentage composition of elements in a compound (11.2.3 Empirical and Molecular formulae).* (ii) *Describe the extraction of copper. Iron and zinc from their ores. (iii) describe the diagrammatic representation of pure metals.*

The question was on the extraction of copper one of the metals mined in Zambia. It required calculating the percentage of copper in the two ores malachite and chalcopyrite given. It also required providing the chemical equations that take place when extracting copper from $CuFeS_2$. It further asked about some of the physical properties of copper and a follow up question linking to the use of copper due to it being a good conductor of electricity.

High performing candidates excelled in calculating the percentage of copper in the given ores, writing balanced chemical equations, and providing clear explanations on the malleability and ductility of copper compared to non-metal sulphur. Average candidates had some challenges with calculating the percentage of copper in the ores and explaining the structure of copper that makes it malleable and ductile, and some struggled with balancing the provided chemical equations. Those below average either scored nothing or did not attempt some parts of the question or failed to do mathematical manipulations.

High Performers:

- Correct use of terminologies and good understanding of concepts
- Logical and orderly presentation of work with minimal omission of essential work
- Good mathematical manipulation and calculation skills
- Logical interpretation of concepts
- Good data plotting, graphing, and drawing skills.
- Correct use of scientific terms and language, including correct spellings
- Attempting all compulsory and optional questions without leaving unanswered questions.

Average Performers:

- Correct use of terminologies and fair understanding of concepts
- Logical and orderly presentation of work with occasional omission of essential work.
- Fairly correct analysis and understanding of concepts.
- Able to write correct symbols of elements and components and chemical/word equations.
- Able to identify substances involved in chemical processes.
- Fairly good graph interpretation.
- Writing correct chemical equations and showing units on numerical answers, with some omissions in essential steps.
- Average understanding of the subject matter with some mix up in concepts

Low Performers:

- Poor use of terminologies and understanding of concepts
- Failure to understand the question and the concept being asked.
- Poor organisation of responses, incomplete answers or responses in most cases
- Average to poor mathematical skills and omission or putting wrong units.
- Inability to plot graphs, leaving the graphs with no title, unlabeled axes, and poor scales.

General Challenges:

- Could not give scientific reasons and explanation.
- Lack of knowledge of order of sequence in which the processes are carried out in crystallization.
- Leaving out or providing wrong units on numerical answers
- Inability to correctly balance chemical equations.
- Inability to label axes of a graph correctly
- Failure to give correct symbols.
- Failure to do computations and skipping essential steps in calculations.
- Not showing all calculations leading to loss of marks

- Generally giving alternative answers in brackets where they had a mix-up of concepts.

Recommendations

The following is recommended:

- Practical tasks be given to learners frequently to enhance understanding of practical work.
- Teachers should aim to cover the syllabus content comprehensively and ensure that learners understand the concepts deeply.
- School Based Assessments (SBAs) must include high-quality questions that test higher-order thinking skills.

3.4.4.2 Science

The Science assessment aims to measure learners' competencies and achievements in accordance with the syllabus and serves as a certification for further education and entrepreneurship.

Analysis of Performance

Paper 1 (Physics component)

The assessment presented mixed performance. Candidates did well in some questions while in others showcased challenges. In section A, most candidates had difficulties in reading values of mass and volume and converting temperature to Kelvin. In section B, candidates had difficulties in understanding the distinction between words such as linearity, responsiveness, sensitivity, and accuracy of a thermometer. In section C, candidates faced challenges in questions related to measurements, magnetism, and radioactivity.

With regards to individual questions, question B1 on measurements was not well answered. Further, there was confusion in defining half-life in question B9 on radioactivity. Candidates who attempted section C chose questions C1 and C2.

Competencies Exhibited by High Performers

- Demonstrated logical and organized presentation of work with minimal omissions.
- Exhibited good mathematical manipulation and calculation skills with the use of appropriate units.
- Demonstrated the ability to read and comprehend questions effectively.
- Correctly applied basic principles in physics.
- Exhibited good communication skills by analysing and applying facts and concepts in an orderly manner.
- Possessed good data plotting, graphing, and drawing skills.
- Correctly used scientific terms and language, including correct spellings.
- Produced well-drawn diagrams.
- Applied knowledge and skills from SBA practical questions to theory examination questions effectively.
- Able to compute figures accurately and recall properly.

Competencies Exhibited by Average Performers:

- Logical and orderly presentation of work with minimal omission of essential work.
- Good mathematical manipulation and calculation skills, with appropriate units.
- Able to read and comprehend questions well.
- Correctly applied basic principles in physics in most cases.
- Fairly good communication skills, with the ability to analyse and apply facts and concepts in an orderly manner.
- Good data plotting and graphing skills, with some missing information and smaller coverage of the graph paper due to poor scale use.
- Mostly good drawing skills, with reasonably well-drawn diagrams.
- Correct use of scientific terms and language, including correct spelling.

- Fairly good application of knowledge and skills from SBA practical questions to theory examination questions.
- Able to compute figures and recall properly.

Competencies Exhibited by Average Performers

- Inadequate understanding of basic concepts in physics, including those covered in grade 10.
- Poor application of knowledge and skills from practical questions in the theory examination.
- Limited ability to think critically, analyse and apply knowledge in answering questions.
- Weak skills in drawing graphs and diagrams.
- Inability to respond to questions on certain topics, such as radioactivity.
- Poor mathematical computation skills, with insufficiently systematic and logical calculations leading to incorrect answers with or without units.

Common Challenges

- Most candidates struggled with questions that required calculations and writing radioactivity equations and related concepts.
- Many low performers exhibited poor mathematical manipulation skills and struggled with handling data and drawing graphs.
- Some candidates used the wrong units for correctly calculated quantities/figures.
- Missing essential steps and wrong substitutions of given data were common errors made by candidates.
- Many candidates struggled with correctly plotting or interpreting graphs.
- Inability to comprehend the focus and demand questions was a challenge for some candidates.
- Some candidates provided incomplete descriptions and definitions of some questions.

Paper 2 (Chemistry component)

Candidates performed well on questions related to separation techniques, covalent and ionic bonding, non-metal properties and their uses, and organic chemistry reactions, except for difficulty with describing the processes of liquefaction of air and structural formula of ethyl ethanoate.

Difficult questions included the preparation of insoluble salts, balancing equations for stoichiometry problems, and determining appropriate acid-base indicators and concentrations in titration experiments. These challenges suggest a need for more frequent SBA practice in schools.

Competencies exhibited by High Performers:

- Strong reading and comprehension skills
- Accurate application of basic principles in chemistry
- Excellent communication skills, including analysis and application of scientific concepts.
- Proficient in drawing structural formulas and diagrams on bonding.
- Able to relate practical questions to theory, including construction of chemical equations and balancing.
- Strong computation skills, able to accurately calculate figures such as in stoichiometry.
- Good recall and application of concepts and steps in the preparation of salts

Competencies exhibited by Average Performers:

- Showed fair analysis and understanding of questions.
- Struggled with writing balanced chemical equations and state symbols.
- Fair communication skills in conveying basic scientific knowledge.
- Correctly used units for quantities calculated and constructed chemical equations.
- Challenged with construction of structural formulas in organic chemistry and recall of learnt content had errors.

- Application of practical skills acquired from SBA not evident.
- General awareness of laboratory safety rules was poor, likely due to infrequent practical work in SBAs.

Competencies exhibited by Low Performers:

- Lack deep understanding of basic concepts in chemistry, including those based on grade 10 work.
- Poor critical thinking, analysis, and application of concepts and skills in all answered questions.
- Poor drawing skills of diagrams and structural formula in organic chemistry and bonding.
- Inability to answer practical questions in the theory paper.
- Poor computation skills and difficulty recalling facts.
- Lack of knowledge on Non-metals and laboratory and industrial preparation of gases.
- Struggled with writing equations and calculations in mole concept and stoichiometry.

Candidates faced the following challenges:

- Most candidates struggled with questions that required calculations, writing chemical equations, and drawing atoms/molecules such as in bonding.
- Poor application of practical skills that should have been acquired through SBAs.
- Common errors exhibited by low performers including poor mathematical manipulation skills, poor handling of chemical equations, and incorrect units or substitutions of given data.
- Inability to identify and express or interpret processes and substances and understand the demands of the questions.
- Failure to perform calculations on reacting masses, write correct chemical formulas, and balance equations.
- Incomplete description of some questions.

Science (Physics and Chemistry) Paper 3

Science Paper 3 was conducted by teachers and focused on experimental skills and investigations. In 2022, the average score was 79.65 percent, which was a 2.75 percent increase from the previous year's average score of 76.90 percent.

Recommendations

- Ensure deep comprehension of all topics by learners through effective teaching by teachers.
- Emphasize the need for learners to conduct practical experiments in schools to consolidate theoretical knowledge.
- Provide assessments that require higher order thinking skills.
- Provide in-service courses for teachers, such as CPD, on how to teach organic chemistry, mole concept, and the practical applications of chemistry in everyday life and industry.
- Emphasize the need for good understanding of safety rules in the laboratory and why they need to be applied.

3.4.4.3 Physics

The purpose of the Physics assessment is to measure learners' competencies and achievements as outlined in the Grade 10 to 12 Physics syllabus, CDC 2013. The assessment is also used for certification of learners' achievements as well as entry into tertiary institutions and the engagement in Entrepreneurial activities.

Analysis of Performance

The assessment is based on three components namely Physics Paper 1, Physics Paper 2 and School Based Assessment, Paper 3.

i) Physics Paper 1

Paper 1 of the examination included 40 compulsory multiple-choice items worth a total of 40 marks. The mean score in 2022 was 44.10 percent, which decreased by 14.35 percent compared to the 2021 mean score of 58.45 percent. Although no candidate scored zero, three questions in the Sound

Waves, Optics, and Current Electricity topics posed challenges for both above-average and below-average performers because of their negative discrimination indices.

ii) Physics Paper 2

Paper 2 of the examination consisted of two sections: Section A with eight compulsory structured questions carrying 50 marks, and Section B with four semi-structured/essay questions, from which candidates must choose three. In 2022, the mean score for Paper 2 increased by 8.4 percentage points to 45.15 percent compared to 36.75 percent in 2021. The number of candidates scoring zero was only 3, which was a decrease from 20 in 2021, indicating that the paper was either slightly less difficult or the cohort was better prepared than the previous year.

Most candidates performed well on Questions 1 (Measurements under general Physics), 2 (Motion), 3 (Machines; Work Energy and Power), 4 (Thermal physics), 9 (Pressure), and 10 (Electricity), although many struggled with the concept of the meter recorder in Question 10. Candidates compared the meter recorder to prepaid meters, which are commonly used in households, but failed to understand that the meter recorder records the total electrical energy used over time while prepaid meters show the electrical units remaining after usage. In addition, candidates had difficulties explaining why the earth wire was connected to the water heater and not the lights in Question 10. However, there was a noticeable improvement in the responses to basic electronics and graph plotting and interpretation. It should be noted that most candidates struggled with the part in Question 1 that required knowledge from their practical work.

Candidates struggled with the following questions:

- Question 8 (Static and current electricity), particularly in correctly labelling the parts of the step-down transformer.
- Question 11 (Basic Electronics), although there was a slight improvement compared to 2021, most candidates still did not provide a clear scientific explanation of how the electronic switch operates.

However, candidates responded well to parts b and c on logic gates and their Truth Tables. Teachers need to teach this topic thoroughly to improve candidates' understanding and performance. Conducting school-based assessments can also enhance their understanding.

- Question 12 (Radiation physics), where part c on graphing was poorly done. Candidates had difficulty determining the correct scale and reading from the graph to determine the half-life, despite performing well in parts a and b.

iii) **Physics paper 3**

Paper 3 is school based; administered by teachers with emphasis on experimental skills and investigations. The mean score in 2022 was 87.8 percent compared to 86.81 percent in 2021 giving an increase of 1 percent.

Characteristics of High Performers

- Ability to correctly use terminologies and demonstrate a solid understanding of concepts, which are effectively combined to provide responses.
- Logical and organized presentation of work, with minimal omission of essential components.
- Correct analysis and understanding of concepts required in the question and deduction of appropriate procedural steps.
- Proficiency in mathematical manipulation and calculation, including appropriate use of units.
- Competence in data plotting and graphing.
- Proficiency in drawing.
- Orderly and organized presentation of responses, making effective use of scientific language and terms.

Characteristics of Average Performers

- Demonstrating a solid understanding of concepts and using terminologies correctly, although with some mix-ups when providing responses.

- Presenting work in a logical and organized manner, with occasional omissions of essential components.
- Analysing and understanding concepts required in the question and deducing appropriate procedural steps at a fairly correct level.
- Performing mathematical manipulations and calculations proficiently, with only a few omissions of appropriate units.
- Proficiency in data plotting and graphing, as well as drawing.
- Presenting responses in an orderly and fairly organized manner, with effective use of scientific language and terms.

Characteristics of Low Performers

- Inappropriate use of terminologies and inadequate understanding of concepts.
- Failure to comprehend the question and the relevant concept.
- Poorly organized responses, incomplete answers, or lack of responses in most cases.
- Limited to poor mathematical skills, including the omission or incorrect use of units.
- Inability to plot graphs, resulting in graphs without a title, unlabelled axes, and poor scales.
- Inadequate drawing skills.

Common challenges observed.

- Limited understanding of concepts, leading to misinterpretation of facts or concepts.
- Common poor presentation of work among low performers.
- Limited application of practical and scientific skills in Physics-related contexts.
- Misrepresentation of concepts and relationships among quantities and principles.

Recommendations

The following are necessary improvements for effective Physics education:

- Comprehensive and thorough coverage of the syllabus, including challenging topics such as basic electronics, to enhance student comprehension.
- Integration of practical work to complement theoretical learning in the teaching/learning process.
- Consistent, adequate, and high-quality school-based assessments.

3.4.5 Biological Sciences

The subjects that make up Biological Sciences are Biology and Agricultural Science. These subjects involve practical assessments at school level in order to fully assess the knowledge, skills and values.

3.4.5.1 Biology (5090)

The purpose of the biology assessment is to evaluate candidates' competences in terms of scientific knowledge, skills and values about the living world; certify and place them into tertiary institutions and to evaluate acquisition of skills useful to candidates in their daily life.

Assessment Objectives

The biology examination assesses candidates on the following aspects:

AO1 Knowledge with Understanding

Learners should;

- state biological phenomena, facts, laws, definitions, concepts, theories;
- understand and use biological vocabulary, terminologies, conventions correctly (including symbols, quantities and units);
- demonstrate knowledge for scientific instruments and apparatus, including techniques of operation and aspects of safety;
- state and determine scientific quantities;

- demonstrate knowledge of biological and technological applications with their social, economic and environmental implications.

AO2 Handling information and Problem Solving

Using oral, written, symbolic, graphical and numerical materials, learners were expected to;

- locate, select, organise, and present information from a variety of sources.
- translate information from one form to another.
- manipulate numerical and other data.
- use information to identify patterns, report trends and draw inferences.
- present reasoned explanations for phenomena, patterns, and relationships.
- make, predict, and propose hypotheses.
- solve problems using biological principles.

AO3 Experimental and Investigative Skills

Learners needed to:

- follow a sequence of instructions;
- use techniques, apparatus, measuring devices and materials effectively, accurately and safely;
- make and record observations, measurements, estimates and perform calculations with due regard to precision, accuracy and correct units;
- make accurate scientific drawings with due regard to appropriateness and proper labelling;
- interpret, evaluate and report upon observations and experimental data;
- identify problems, design/plan and carry out investigations, including the selection of techniques, apparatus, measuring devices and materials;
- evaluate methods and suggest possible improvements;
- use experimental control.

Analysis of Performance – (Biology Paper 1)

Analysis of Performance – (Biology Paper 2)

Well answered questions

The following questions were well attempted by candidates, indicating a strong understanding of the concepts and skills tested in the examination, and suggesting that these topics were well-taught and adequately covered in the curriculum.

Section A

Question 1 Cell Structure and Functions and Cell Organization: 1 (ai) and (aiii) on labeling and differentiating respectively.

Question 2: Diffusion, Osmosis and Active Transport/Enzymes Characteristics

Question 3-Holozoic Nutrition: except that candidates failed to describe effects of common ailments on part **S**: liver.

Section B

Question 1- Respiratory System-Subtopic Gaseous Exchange and Types of Respiration.

Question 2- Excretion and Homeostasis.

Not well answered questions

The following questions received low performance and were not well attempted by candidates. It is evident that these questions presented a challenge to the majority of the candidates, and further study and preparation are required in order to improve their performance in these areas:

Section A

Question 4: Sexual Reproduction in Man. Candidates failed to interpret events of fertilization.

Question 5: Genetics – Subtopic Inheritance. Candidate's failure to correctly interpret blood group symbols and use of pedigree.

Section B

Question 3: Nervous System and Sense Organs.

Question 4: The Skeleton and Locomotion- Subtopic Mammalian Skeleton.

Question 5: Ecology- Subtopic Biodiversity.

Characteristics of High Performing candidates.

Candidates in the high performing category demonstrated a variety of skills, including the ability to;

- State biological facts and definitions correctly. Such as Question 1(aiii) the correct function of structure labelled J: Vacuole
- Understand and use biological terminologies including symbols. In section A: Question 5, the candidates correctly used blood Group symbols A and B to derive the correct genotype and phenotype.
- Demonstrate knowledge of biological and technological applications with economic and environmental implication. Such as in Section B: Question (5a), Candidates correctly related the importance of a rich biodiversity and showed how human activities reduce biodiversity.
- Use symbols, tables and graphs to organize and present information from the various sources.
- Translate information from the tables and graphs and relate it to biological facts.
- Use provided diagrams and graphs such as on enzymes to identify parts, state functions and contrast related diagrams of animal and plant cells.
- Present reasoned explanation for processes, actions and phenomenon. Such as Question (4b) to explain why a bone is a considered as a living tissue.
- Descried the adverse effects of cigarette smoke on the health of human beings.

Characteristics of Average performing candidates:

Candidates with average performance were able to:

- Identify labelled parts and state functions of structures.
- Recall with understanding cell organization and provide named examples of a system in plants and animals.
- Interpret and relate correctly graphical application in characteristics of enzymes.
- Define processes such as types of respiration and excretion.
- state terminologies such as Optimum Temperature.
- Interpret the pedigree diagram for parental blood groups and draw the genetic diagram from the narrated events.
- Describe the biological facts related to spinal, cranial and conditioned reflex.

Characteristics of low performing candidates:

Candidates with low performance had difficulties to:

- State biological facts and definitions.
- Understand and use biological vocabulary, terminologies, and symbols for blood groups.
- Demonstrate knowledge of biological application to economic and related environmental implications. Such as the importance of biodiversity and effects of human activities on biodiversity.
- Relate biological information from a table, flow chart and graph.
- Present reasoned explanation for relationship and biological theories as to why a bone is considered as a living tissue.
- Defining terms and explanations for processes such as excretion and respiration using correct biological facts.

3.4.5.2 Agricultural Science (5037)

The purpose of assessing Agricultural Science at Grade 12 is to evaluate candidates' knowledge, skills and values across the Agricultural Science syllabus as well as certification of the candidates.

Assessment Objectives

Candidates are assessed against the following aspects:

AO1 Knowledge with Understanding

Candidates are assessed on their knowledge and understanding of the following:

- Agricultural science symbols, quantities and units of measurement;
- Agricultural science terms, facts, concepts and principles.

AO2 Handling information and Problem Solving

Candidates will be assessed on their ability to:

- organise and present information from a variety of sources (words, symbols, graphs and numbers and so on);
- translate information given in one form to another. (e.g. numerical data to graphical data);
- use information to observe trends and draw conclusions;
- present explanations for observed facts and relate them to each other;
- make predictions based on observations;
- Use knowledge to solve problems.

Analysis of Performance

- Candidates demonstrated proficiency in answering the questions presented in Section A Questions 1, 2, and 3, as well as in Section B Questions 3 and 5. They were able to provide appropriate and accurate responses to the questions, indicating a strong understanding of the underlying concepts and principles.
- On the other hand, the candidates' performance was weak in Question 4c and 4d, where they were unable to provide a description of terminologies related to depreciation and the meaning of risks in agriculture. Additionally, they struggled to provide explanations in Question 5b and 5c regarding the air-

cooling system of a small single-cylinder engine and the proper maintenance of a tractor's water-cooling system. These results highlight areas of weakness in the candidates' knowledge and understanding, which can be addressed through targeted instruction and practice.

- The candidates exhibited weaknesses in Section B Questions 1a and 2a. They were unable to provide accurate explanations for the term "forces" and lacked understanding of the application of reserve land in agricultural economics.

Characteristics of High Performing candidates

The candidates who performed at a high level demonstrated the following characteristics:

i. Demonstrate the ability to identify and name parts while accurately stating their functions, such as in Section A, Question (1b), Part X: Root Nodules.
ii. Effectively use and define key terms, including those related to weed and land classification.
iii. Describe the mechanism of action for chemicals, such as selective herbicides, with accuracy and precision.
iv. Display an understanding of the correct use of equipment, materials, and procedures for a given farm activity.
v. Explain the effects of specific negative activities on named organisms, such as the impact of frightening a lactating cow before or during milking, with clarity and detail.
vi. Demonstrate a clear understanding of the mechanism behind the air cooling system of a small single-cylinder engine.
vii. State the farming practices used under different agricultural systems in a comprehensive and accurate manner.
viii. Describe the methods for preparing soil for sowing maize and controlling weeds with detail and precision.
ix. Outline the precautions to take when storing a herbicide and effectively relate them to the specific context.
x. Recall facts and accurately state the four stages in the life cycle of a tick and the two classes of bees in a bee colony.

xi. Identify signs of a bad layer and explain the reasons why farmers are advised to dehorn cattle with clarity and accuracy.

xii. Demonstrate the ability to manipulate numerical and other data to calculate required quantities for an enterprise with accuracy and precision.

Characteristics of Average Performing candidates

The candidates in this category exhibited the following common traits:

i. Clearly explain the benefits of using hybrid seeds in agriculture.

ii. Provide a detailed description of the mechanism of action for selective herbicides.

iii. Accurately identify the specific farm activity being carried out by the farmer in Question (3ai), which involves collecting semen.

iv. Provide an accurate description of expressions used in agricultural economics, such as "factor of production," as presented in Question 3.

v. List relevant facts related to three different types of parent rocks and the factors that limit land use in Zambia.

vi. Identify and explain the two groups of forces responsible for the disintegration of rocks in a clear and concise manner.

vii. Provide a detailed explanation of processes such as digestion in ruminants, using clear and accurate language.

viii. Recall and state the other factors of production on a farm and explain the method of calculating depreciation accurately.

ix. Demonstrate the ability to interpret and relate the negative effects of controlling prices of farm products or produce accurately.

However, they were unable to:

x. Provide a detailed explanation of terminologies used in agricultural economics, such as depreciation, with precision and clarity.

xi. Explain why it is essential to wear protective clothing when applying a herbicide, using relevant and accurate information.

xii. Use information to explain the reasons for safety in the storage of harvested maize when the moisture content of grains is 12 percent or less.

xiii. Use deductive reasoning to draw conclusions about why fertilizers are considered a variable enterprise cost.

Characteristics of Low Performing candidates

The candidates who performed at a low level were unable to:

i. Identify and accurately state the function of labelled parts, such as root nodules, with precision and clarity.

ii. Define key terminologies used in agriculture, including those related to weed and land classification, using clear and accurate language.

iii. Demonstrate knowledge of technological applications with economic and environmental implications, such as how selective herbicides work, using detailed and precise explanations.

iv. Relate with a comprehensive understanding the effects of planting an early-maturing maize variety in a specified agro-ecological zone.

v. State the fundamental facts and definitions for terminologies used in farm activities, as presented in Question 3, with accuracy and clarity.

vi. Relate practically and accurately the reasons why some small-scale farmers avoid certain systems, such as natural mating systems of their animals.

vii. Recall the factors that limit land use and affect agricultural development in Zambia with detail and precision.

viii. State relevant facts on any system under which land in Zambia is administered with accuracy and clarity.

ix. Present reasoned and evidence-based explanations that demonstrate an understanding of the benefits of various farming practices, such as sharing experimental results by farmers and having several enterprises on a farm.

x. Accurately state or recall the stages of the life cycle and the classes of a bee colony.

xi. Name and apply correctly the various parts of a mouldboard plough used for specific functions, using accurate and clear language.

xii. Understand and describe terminologies used in agriculture, such as center of gravity, accurately and with precision.

xiii. Provide a clear and accurate explanation of how to calculate work, using appropriate formulas and information.

3.5 Practical Subjects

This cluster is made up of seven subjects that include; Art and Design, Musical Arts Education, Design and Technology, Fashion and Fabrics, Food and Nutrition, Home Management and Physical Education.

3.5.1 Art and Design (6010)

The 2022 examination saw a slight improvement of approximately 0.42 percentage points, which was similar to the trend observed in the 2021 examination. The overall performance of the candidates in 2022 was 64.59 percent.

Characteristics of High Performing candidates

In Section A, where candidates were required to answer using one-word or short phrases, they demonstrated the following abilities:

- Displayed a solid understanding of the questions and accurately interpreted them.
- Presented their work neatly and with clarity.
- Accurately identified the prominent Zambian artist who made the Freedom Statue.
- Demonstrated a strong understanding and knowledge of Zambian art history.
- Accurately interpreted the questions and demonstrated an understanding of the term "illustration" in Art and Design.
- Provided techniques such as pleating, crumpling, etc. as required by the question.
- Correctly explained book crafts and the different types of binding.

In Section B, which was based on picture study, the candidates exhibited the following abilities:

- Properly aligned their answers with the correct order, namely foreground, middle ground, and background.
- Clearly differentiated between the concepts of shade and shadow, demonstrating a solid understanding of these fundamental concepts.

Characteristics of Average Performing candidates

In Section A, this group of candidates were required to answer using one-word or short phrases, they demonstrated the following:

- Despite understanding what was required in the questions, they struggled to express themselves correctly and coherently.
- The presentation of their work was disorganized and lacked neatness and clarity.
- Some candidates were unable to name the prominent Zambian artist who made the Freedom Statue, indicating gaps in their knowledge.
- They seemed to lack understanding of Zambian art history, which negatively impacted their performance.
- Failure to interpret the question correctly led to an inability to define the term "illustrate" in Art and Design.
- While some candidates provided procedures, they struggled to explain techniques, indicating a need for a deeper understanding of the distinctions between techniques, methods, and procedures.
- Their knowledge and understanding of bookcraft and the different types of binding were limited, highlighting areas where further instruction and practice may be needed.

In Section B, which was based on picture study, this group of candidates exhibited the following abilities:

- The majority of candidates were unable to align their answers with the correct letters (A, B, and C), resulting in loss of marks. Learners must understand the proper order of foreground, middle ground, and background to avoid such errors.
- Some candidates failed to distinguish between different types of drawing and approaches to drawing. It is essential to understand the distinctions between realistic, abstract, and non-objective drawing styles.
- They struggled to differentiate between the technical terminologies of shadow, shade, highlights, and dark tones in Art and Design. It is important for learners to have a solid understanding of these terms to perform well in the subject.

Characteristics of Low Performing candidates

In Section A, this group of candidates were required to answer using one-word or short phrases, they demonstrated the following:

- These candidates were unable to comprehend the questions and, in some cases, simply copied them without attempting to answer.
- They struggled with spelling, indicating potential gaps in their foundational knowledge of language and vocabulary.
- They lacked knowledge of Zambian art history, which negatively impacted their performance in the subject.
- They failed to explain techniques or provide proper procedures, demonstrating an inadequate understanding of the subject matter.
- They lacked adequate knowledge of bookcraft and the different types of binding, indicating a need for further instruction and practice in these areas.

In Section B, which was based on picture study, this group of candidates exhibited the following abilities:

- They were unable to align their answers with the letters A, B, and C, indicating a need for more exposure to the order of foreground, middle ground, and background in art and design.
- They demonstrated a lack of knowledge regarding the types of drawing and approaches to drawing, including realistic, abstract, and non-objective styles, as well as drawing from observation.
- They struggled to differentiate between important technical terms such as shade and shadow in art and design, highlighting the need for a more comprehensive understanding of these concepts.

Based on the performance analysis, it is recommended that:

- Learners be exposured to Zambian Art History, including knowledge of prominent Zambian artists and their works.
- Correct spelling should be emphasized in all areas of study.

- Design concepts and terminologies should be taught in detail to ensure a thorough understanding of the subject matter.
- Instruction on dye crafts should be comprehensive, with a focus on understanding the distinctions between techniques, methods, and procedures.
- Types of drawing and approaches to drawing should be emphasized to ensure a deep understanding of the different styles and techniques involved.
- A range of technical terms in art and design, including shadow, shade, highlights, and dark tones, should be taught in detail.

3.5.2 Design and Technology (6045)

The purpose of the Design and Technology assessment at Senior Secondary School Level is to measure learners' achievement against the set competencies outlined in the 2013 Grade 10 -12 syllabus.

Analysis of Performance

The Design and Technology examination is made up of two (2) papers. Paper 1 is theory and centrally set while paper 2 is School-Based Assessment (SBA).

Characteristics of High Performing candidates

In Section A, the following traits were observed among candidates in this category:

- They demonstrated knowledge by correctly naming tools and identifying joints, indicating a solid understanding of the subject matter.
- They displayed an understanding of the finishing process and correctly identified the appropriate finish for the outdoor tank stand, highlighting their ability to apply their knowledge to real-world scenarios.
- They logically explained processes, indicating strong analytical and problem-solving skills.
- Their sketches were well-presented, with proportionally drawn and rendered images indicating a high level of technical proficiency.
- They accurately interpreted the parts shown in the drawing, highlighting their ability to analyse and comprehend visual information.

- They correctly explained ways of preventing rust or corrosion, indicating a comprehensive understanding of the subject matter.

In Section B Part I, the following traits were observed among candidates in this category:

- They accurately identified the correct situation in the design questions, indicating a strong understanding of the problem at hand.
- The design brief, which included the location and problem to be solved, was presented in a clear and concise manner.
- Creative thinking was demonstrated in the potential solutions offered, highlighting the candidates' ability to think outside the box.
- Annotations were effectively incorporated into the solutions in accordance with the question's requirements.
- The correct construction methods were utilized in the sketches, indicating a high level of technical proficiency.
- Safety considerations for the artifact were adequately addressed, in line with the requirements of the question.

In Section B Part II, the following traits were observed among candidates in this category:

- The candidates provided accurate information on the abrasives used for different materials, indicating a strong understanding of the subject matter.
- They effectively distinguished between the cutting list and the material list, highlighting their ability to comprehend and analyse technical information.
- They demonstrated knowledge of various circuit boards used in electronics, indicating a comprehensive understanding of the topic.
- The candidates accurately outlined the key points and correct sequence in the process of snap riveting, indicating a high level of technical proficiency.
- They exhibited knowledge of different materials and their properties, and were able to select the appropriate materials for specific purposes in the given environment.

- The candidates cited appropriate striking tools for specific uses, which was a crucial aspect of the question.
- They highlighted the best methods for stabilizing structures, considering concepts related to rigidity, indicating a strong understanding of the topic.
- The candidates mentioned suitable adhesives for joining the given materials, highlighting their ability to apply their knowledge to real-world situations.

In Section B Part III, the following traits were observed among candidates in this category:

- The candidates skilfully drew the figure to the appropriate proportion and effectively rendered the gate, producing an aesthetically pleasing result.
- The correct method of developing the truncated Hexagonal Lamp Shade - radial method was applied by the candidates, indicating a high level of technical proficiency.

Characteristics of Average Performing candidates

In Section A, the following traits were observed among candidates in this category:

- Although the candidates were able to correctly identify finishing processes such as painting and varnishing, they failed to name a tool used in the finishing process.
- Many candidates in this category struggled to provide satisfactory ways of checking for squareness, but some were able to mention the try square tool.
- Some candidates mistakenly mixed-up joints used on metals with those used on wood.
- While Part 1b was answered satisfactorily overall, some candidates had difficulty relating the correct finish for outdoor conditions.
- The candidates displayed limited knowledge in the process of cutting internal threads and mixed up the steps.
- They also failed to provide the correct type of hinges to be used on the two pieces and could not identify the correct materials for making hinges.

- Most candidates struggled to interpret the drawings shown in figure 6, which affected their answers to Question 4(a)(ii).
- The candidates were unable to provide the correct ways of preventing rust on mild steel, but they were able to provide advantages of plastics represented by the symbol in figure 7.
- Candidates had difficulty isolating the correct motion for the handle and wings, and often interchanged the motions. Additionally, they failed to identify the piano hinge and confused it with the butt joint, which led to incorrect information about its use.

In Section B Part I, the following traits were observed among candidates in this category:

- They struggled to properly formulate the problem in the design question, which affected the design brief in some cases.
- Some candidates only mentioned the location or place in their design brief.
- They sketched the design but failed to include necessary annotations, which affected interpretation. In some cases, the annotations were placed separately from the drawing.
- The sketches were not clear and were not proportionally drawn, making it difficult to understand the design.
- Most of them focused on outlining the personal safety attire to be considered instead of the safety of the artefact to the user.

In Section B Part II, the following traits were observed among candidates in this category:

- The candidates demonstrated limited knowledge on joints used in box constructions for wood and mixed up the answers for the cutting list and material list.
- They provided incorrect responses regarding the abrasives used on different materials.

- A significant number of candidates failed to mention the correct circuit boards used in electronics and could not differentiate between circuit drawings and layout diagrams.
- Most candidates missed the key points in snap riveting and incorrectly sequenced the steps. They also failed to use annotations to support their sketches.
- Some candidates could not provide the properties of materials, thereby failing to fully understand how to select a particular material to suit the intended purpose.
- They also failed to match the striking tools given with their specific uses, which was a key aspect of the question.

In Section B Part III, the following traits were observed among candidates in this category:

- Drawing the gate, but without maintaining proportionality or enhancing the figure with rendering.
- Some who attempted the question on development failed to follow the correct method of developing a pyramid, indicating that they had limited knowledge. For example, some used a parallel method instead of a radial method in developing pyramids.

Characteristics of Low Performing candidates

In Section A, the following traits were observed among candidates in this category:

- Candidates displayed limited knowledge on the tools used in the workshop, as they were unable to name them correctly, left blanks, or provided wrong answers.
- Most candidates were unable to provide satisfactory responses on checking for squareness, resulting in a lot of blank pages.
- Candidates had no knowledge or understanding of finishes as evidenced by a lack of responses on the topic.
- Many blank pages were left on topics such as hinges and thread-making processes.
- No sketches were drawn, and annotations were not provided as a result.

- Candidates failed to identify the correct motion of the handle and wings in question 5. Furthermore, those who attempted the hinge question could not correctly identify the piano hinge and often confused it with the butt hinge.

In Section B Part I, the following traits were observed among candidates in this category:

- The problem situation was not properly formulated.
- Candidates failed to identify the correct problem and provide an appropriate design brief to address the problem in part 6.
- Most candidates did not sketch a possible solution. For those who did, their sketches were poorly presented and lacking in annotations.
- Sketches were not presented in 3D or pictorial form.

In Section B Part II, the following traits were observed among candidates in this category:

- A significant number of candidates showed poor performance in the Design and Technology assessment, as most parts of the questions were either partially answered or answered incorrectly.
- Many of the candidates demonstrated limited or no knowledge of joints used in wood materials, leading to incorrect responses.
- The fact that some candidates left the question on abrasives blank suggests a lack of understanding on the topic.
- Candidates struggled to correctly identify the specific circuit boards used in electronics and failed to distinguish between circuit drawings and layout diagrams.
- The procedure for riveting two sheets of metal was not followed properly.
- Candidates lacked application of materials and their properties in their responses.
- The question on stabilizing structures was not attempted by most candidates, likely due to the higher level of understanding required for the question.

In Section B Part III, the following traits were observed among candidates in this category:

- Some candidates incorrectly drew the development of the lamp shade by using parallel development instead of the radial method.
- Poor drawing skills were exhibited, with sketches being of poor quality and lacking proper rendering.

Based on the analysis, the following **recommendations** have been identified.

- Candidates should be encouraged to annotate and enhance their sketches, even for exercises given in class, to improve their presentation and clarity.
- The full range of material processes should be covered, emphasizing correct sequences, to give candidates a wider choice of questions to select from.
- Regular sketching practice exercises should be included to improve candidates' sketching skills.
- Application-based questions should be encouraged in topics such as development to help candidates develop problem-solving skills.
- Candidates should be given orientation on how to answer design questions, including how to develop an appropriate design brief.

3.5.3 Fashion and Fabrics (6050)

The purpose of the Grade 12 Fashion and Fabrics assessment is to measure candidate's knowledge and understanding, application of skills and values as prescribed in the Grade 10 to 12 Fashion and fabric Syllabus.

Assessment Objectives (AO)

Candidates are assessed against the following objectives:

AO1 Knowledge and understanding.

- Identify tools and equipment used in Fashion and Fabrics.
- Demonstrate knowledge and understanding of the parts and operations of the sewing machine.
- Demonstrate knowledge and skills in identifying groups and types of stitches.

- Exhibit knowledge and understanding in designing, sketching and use of paper patterns.

AO2 Application of skills

- Show understanding of the principles and practices in Fashion and Fabrics.
- Demonstrate the correct handling and care of different fabrics.
- Explain and demonstrate the use of various equipment in garment construction.
- Make articles according to specifications.
- Use available knowledge, local resources, and skills to generate income.
- Implement entrepreneurship projects.

Analysis of Performance

Fashion and Fabrics is a two-paper subject, consisting of Paper 1 (theory) and Paper 2 (School-Based Assessment). Both papers are graded out of 100, for a total raw score of 200, which is weighted at 100 percent. The average score in 2022 was 62.18 percent, which is a slight increase of 1.02 percentage points from the previous year's score of 61.16 percent. Candidates performed better in the School-Based Assessment, with an average score of 84.52 percent, compared to 38.90 percent in the theory paper.

Of all the candidates who sat the Fashion and Fabrics examination, 97.67 percent passed, while 2.33 percent failed. About 61.9 percent of the candidates achieved at least a credit grade.

Competencies exhibited by high performing candidates.

- Neat and clear explanations were provided by most candidates in this category.
- The responses showed a high level of understanding of the questions, as evidenced by the depth of their answers.
- Appropriate responses were given according to the question requirements.

- Work was presented in legible handwriting with minimal spelling errors.
- In section B, good interpretation of drafting instructions was shown in question 1, which required drafting a sleeve with an elbow dart.
- Well-drafted diagrams were presented in section C for question 2(a), which required step-by-step illustrations on working out seams.
- Logical and orderly presentation of responses was observed in questions that required logic.
- Candidates attempted or answered all questions as required.
- In section C, candidates made good choices of questions that they knew they could thoroughly tackle.

Characteristics of average performance

- The work was generally well-presented, with fairly legible handwriting.
- Good responses were provided for questions that required definitions and short answer responses, especially in section A.
- Candidates gave good responses to questions that required diagrams, particularly in question 8 of section A where they correctly drew the symbols of care labels as required.
- Candidates struggled to interpret questions with contextual reasoning, as seen in question 1 of section B where they failed to interpret the given measurements into the required sketch.
- Failure to align measurements to the sketch was observed, as candidates failed to plot the given measurements onto the sketch.
- Most candidates left blank spaces on questions with part questions in section C, indicating an inability to respond explicitly.
- Limited vocabulary was used to express the required responses.

- Insufficient knowledge and information was demonstrated in questions that dealt with knitting and crocheting.

Competencies exhibited by low performing candidates.

- Candidates exhibited a complete lack of knowledge on the subject matter, resulting in out-of-context answers.
- Many candidates lacked the knowledge required to provide detailed responses to the questions.
- The responses provided by many candidates were incomplete or missing entirely, with the questions on knitting, crocheting, embroidery, and crafts in general being the most affected.
- In Section B, many candidates failed to interpret the instructions for paper pattern drafting, resulting in unanswered questions.
- The presentation of work by candidates was poor, with many responses being unnecessarily repetitive.
- Many candidates had limited vocabulary, which led to inadequate responses, particularly for question 2 (d) in Section C, where the part question was left blank, and some candidates merely copied the question.

Sample Questions where Candidate Performed Poorly in Fashion and Fabrics

Question 1 Section B: Given the measurements below, draft a pattern piece for a sleeve with an elbow dart.

a) Head of sleeve – 3.5cm; length – 13cm; width of sleeve – 8cm; length of dart – 2.5cm; seam allowance – 0.5cm.

b) Indicate at least **five** pattern markings in the sketch you have drafted.

Challenge: Candidates failed to interpret the question due to its contextual reasoning, which resulted in an inability to translate the given measurements into the required sketch.

The majority of candidates performed below average in aligning measurements to the sketch. Even those who managed to produce a sketch were unable to plot the given measurements accurately, resulting in an incomplete response. As a result, many candidates left Section B unanswered, indicating a gap between the practical and theoretical aspects of Fashion and Fabrics.

Question 2 (a) Section C: with a help of diagrams, illustrate how to work out the following seams:

i) French Seam

ii) Plain/Open Seam

iii) Double-machined Seam

iv) Overlaid Seam

Challenge: The majority of candidates who chose question 2 in Section C received a score of zero, while those who performed well tended to avoid the question altogether. The candidates who attempted the question produced diagrams that were unclear and did not effectively communicate their ideas. Furthermore, most candidates left part 2 (a) of the question blank.

3.5.4 Food and Nutrition (6065)

The purpose of Grade 12 Food and Nutrition assessment will be to measure candidates' knowledge and understanding, application of skills and values acquired in the study of Food and Nutrition, in order to promote a self-sustained livelihood.

Assessment Objectives (AO)

Candidates are assessed against the following objectives:

AO 1 Knowledge and Understanding

- Identify kitchen layouts, utensils and equipment and their uses.
- Explain food and its nutrients.
- Outline functions of nutrients and their deficiency diseases.

- Show knowledge of household budgeting, saving, entrepreneurship and consumer education.

AO 2 Application of skills and Problem Solving

- Plan, prepare, cook, and serve various meals.
- Analyze and plan meals according to occasion and individual needs.
- Apply principles of preservation and conservation in the management of resources.
- Demonstrate basic skills in practicing safety rules in the kitchen.
- Apply first aid on minor injuries.

AO 3 Entrepreneurship skills

- Identify, entrepreneurship skills and opportunities in Food and Nutrition.
- Plan and Cost items and services.

Analysis of Performance

Candidates who took the Food and Nutrition examination in 2022 achieved the highest mean percentage out of all subjects. The performance was generally good, with raw marks ranging from 8 to 239 out of 250. The subject mean score for 2022 was 70 percent, showing a 12 percent increase compared to the previous year's score of 58 percent. Notably, candidates performed better in SBA than theory, with the mean SBA score being 132.4 percent and the mean theory score being 42.28 percent. Out of all candidates who took the examination, 98.74 percent passed, with 1.26 percent failing, and 70.06 percent achieving Credit or Better.

Competencies exhibited by high performers.

Candidates in this category exhibited the following competencies.

- Explicit and meaningful explanation of scientific concepts in relation to the question requirement as exhibited in question 3(c) Section A about the reactions that take place during digestion.

- Good interpretation of questions that required critical analysis to arrive at the required response. Question 5(c) required candidates to plan a snack for a school going child. Candidates presented the question very well by first analysing the dietary needs of a school going child then synthesised their choice of dishes bearing in mind colour, texture, nutritional value among others.
- Ability to draw distinctions between nutritional concepts. Candidates in this category distinguished terminologies comprehensively even giving examples as was the case with question 2(b) on macro and micro nutrients.
- The majority however, failed to differentiate complementary from supplementary breastfeeding. Question 5(b) proved to be difficulty even to candidates in the high performing category.
- Candidates generally had good command of language and subject matter which made it easier to understand their responses.

Characteristics of Average Performers

Candidates in this category exhibited the following competencies.

- Generally fair presentation of work with clear explanations.
- Good responses for questions that required definitions and short answer responses especially in section A.
- Failure to clearly explain science–related questions, the case of question 3(c) in section A on the action of digestive juices during digestion. Candidates gave contents of the juices instead of the actions that take place during digestion.
- Failure to outline processes that required logic explanation as was the case of question 4(c) where candidates failed to give five stages in the changes that occur during bread making.
- Lack of full information to explain required concepts detailed the case of question 6(c). candidates could not state features in line with quality control analysis in food production. Part c was left blank by most candidates.
- Generally, candidates had good sentence construction with minimal spelling errors.

Characteristics of low performers

- Inability to understand the requirements of the question due to poor command of English for some candidates.
- Failure to express themselves fully due to limited vocabulary and knowledge of the subject matter. Most candidates left blank spaces, unanswered question.
- Failure to construct meaningful sentences especially for questions in section C that required explanation of procedures and concepts. Question 6(b) was not well answered, candidates could not explain any useful information on standard code (package information) for consumers and instead answered out of context while others left blank spaces.
- Failure to complete all parts of the question. Candidates answered questions in parts for example, two out of five parts would be answered, and the three parts would be left blank.

Sample Questions where Candidate Performed Poorly in Food and Nutrition

Question 5(b) Section A: Differentiate complementary from supplementary breast feeding. Most candidates failed this question including the high performers. The majority answered out of context and a few candidates had the idea but swapped the meanings.

Question 17 Section A: Mention one good practice of a consumer. Some candidates mentioned rights of a consumer instead of good practices such as getting a receipt, checking expiry date, window shopping etc. Most candidates left blank spaces.

Question 2 Section B: Pulses are an important inclusion in our diet;

a) describe pulse with examples.

b) Outline four uses of pulses.

c) Discuss the nutritional value of pulses.

d) Describe the food value of fruits.

e) List names of fruits that are called citrus.

Challenge: Candidates could not describe pulses though a few gave examples of pulses. Most candidates could not give more than one use of pulses and so was for the nutritional value. Parts (d) and (e)were left blank and those that attempted failed to describe the food value of fruits. Surprisingly even examples of citrus fruits were not known by the majority of candidates.

3.5.5 Home Management (6075)

The purpose of Grade 12 Home Management assessment measures candidates' knowledge and understanding and application of skills in both home setup and hospitality industry.

Assessment Objectives (AO)

Candidates are assessed against the following objectives:

AO1 Food and Nutrition

- Exhibit the ability to plan and manage time during food preparation.
- Demonstrate knowledge and skill on meal preparation and presentation for different needs and occasions.
- Demonstrate knowledge and skill on the use of modern and improvised equipment and materials in food preparation.

AO2 House Craft

- Demonstrate knowledge and skill on choosing and planning a home.
- Demonstrate basic skills in cleaning the home and use of various materials.
- Market and cost accessories, articles and services made and provided to the clients.
- Develop a sense of cooperative endeavour and entrepreneurship.
- Demonstrate knowledge and skills in interior and exterior decoration.

AO3 Laundry

- Demonstrate basic skills in laundering various articles.
- Show an understanding in the use of various laundry materials and equipment.
- Identify different types of Fibres and Fabrics and how to care for them.

AO4 Parenthood

- Identify types of families and the roles for each family member.
- Demonstrate understanding of factors influencing the size of the family.
- Appreciate traditional ceremonies from different provinces.

AO5 Health and safety

- Exhibit knowledge on safe lifestyles, reproductive health, and delivery.
- Show the ability to treat simple accidents and ailments.
- Demonstrate understanding of social health and care services.

AO6 Needlework and Crafts

- Identify fibres and fabrics used in the home.
- Demonstrate ability to apply principles on needlework and crafts.
- Identify needlework tools and equipment.
- Show understanding in various processes in Needle Work and crafts.

Analysis of Performance

Home Management consists of two parts, Papers 1 and 2. Paper 1, which covers theory, is centrally set by ECZ, while Paper 2, which is the School-Based Assessment, is set and graded by teachers within their respective schools. In 2022, the overall mean performance in Home Management improved to 66.42 percent from 62.20 percent in 2021, indicating an increase of 4.22 percent from the previous year.

Out of the candidates who sat the Home Management examination, a remarkable 97.01 percent passed, while only 2.99 percent failed. Additionally, 67.47 percent of the candidates received a quality pass, earning a credit or better.

Characteristics of High performing candidates

- Clear and concise responses were presented in accordance with the requirements of the questions.
- A sufficient number of points were provided, meriting full marks.
- Questions were interpreted well, and responses were accurate and relevant.
- Sentences were well-constructed, with clear explanations that demonstrated a good understanding of the subject matter.
- The ability to thoroughly address all parts of the selected questions in section B was demonstrated.

Characteristics of Average Performing candidates

- In section B, some candidates failed to complete the expected number of questions, suggesting a need for better time management skills and/or a more thorough understanding of the questions.
- Limited or insufficient explanations were provided for some concepts, indicating a lack of depth or understanding of the subject matter.
- Some candidates were unable to attempt selected topics, indicating that they may not have covered those topics in the syllabus. This suggests a need for a more comprehensive coverage of the syllabus or additional support in those areas.
- Some responses were skipped or presented in a disordered manner, particularly in cases where logical ordering or sequencing of responses was required (e.g., order of washing up, laundry process of woollens, and cleaning of a stained item). This indicates a need for better organization and clarity in response construction.

Characteristics of low performers

- Some candidates demonstrated inadequate mastery of the subject matter, as evidenced by blank spaces and irrelevant responses.

- Candidates struggled to express themselves coherently, with some copying the question instead of providing responses.
- Some candidates had difficulty comprehending and interpreting questions, indicating a limited understanding of the concepts.
- Limited understanding of the subject matter led to hearsay responses that were not based on the relevant concepts.
- Poorly constructed responses and incorrect spellings were observed, suggesting a need for additional writing skills support.
- Some candidates repeated responses that did not apply due to insufficient knowledge, indicating a need for further training and support.

Candidates performed poorly in the following questions.

Section A: Question 2: Name two metals commonly used in a kitchen.

Challenge: Despite the apparent simplicity of the question, candidates provided answers that listed kitchen items made out of metal instead of the actual types of metal used to make the items.

Section A: Question 10: Mention two instructions found on a care label.

Challenge: The majority of candidates provided responses related to food labels, despite the question clearly pertaining to laundry.

Section B: Question 2:

(a) Define the term disability.

(b) Identify five examples of disabilities.

(c) Mention five causes of disabilities.

(d) Describe five ways of helping children who are disabled.

(e) Mention four behavioural patterns in emotionally disabled children.

Challenge: The question was not widely attempted, and those who did attempt it encountered difficulty in achieving high marks. In general, the definition of disability was not well understood, with some candidates mistaking examples of disabilities for conditions. Some candidates introduced social and spiritual aspects as causes of disability, despite the lack of scientific evidence to support these claims. Parts (d) and (e) of the question caused confusion among candidates, leading to out-of-context responses that were not aligned with the syllabus.

General Challenges and Recommendations

- **Failure to answer all parts of a questions, leaving blank spaces:**

  To improve performance, candidates must be guided to attempt all parts of questions to maximize their marks. Teachers should aim to cover all learning outcomes of the topics as outlined in the syllabus, rather than focusing solely on certain areas. It is also important for teachers to make lessons engaging by exploring all aspects of the topics to encourage candidates to take ownership of the subject, rather than simply memorizing concepts.

- **Inability to interpret instructions for paper pattern drafting:**
  Since its inception, Section B has proven to be a challenging aspect of the examination. Currently, only a limited number of schools are producing high-performing candidates in this section. Therefore, teachers must make a concerted effort to improve their skills in this area to impart the necessary knowledge and confidence to learners. Effective drafting is a crucial skill in Fashion and Fabrics.
- **Failure to respond to science-oriented questions:**

  Despite having covered similar topics in other subjects such as Biology, questions on digestion and its processes have long posed challenges to candidates. To address this, teachers should adopt engaging teaching methods to help learners retain the information. It is important to explore interesting ways of teaching such topics to enhance understanding and promote retention.

- **Failure to comprehend and interpret the questions as required:**

To equip examination-grade learners with the skills necessary to present effective responses that garner marks, teachers should engage in intensive, reflective, and objective revisions. These revisions should focus on identifying best practices and strategies for constructing high-scoring responses. By providing guidance and support in this way, teachers can help learners to achieve better academic outcomes and develop the skills necessary for success in their future academic endeavours.

4.0 Conclusion

The 2022 School Certificate examination was successfully conducted and achieved several milestones. Firstly, the pass mark is nearly 70 percent, which is consistent with the regional average. Secondly, the successful administration of the School Certificate examination at St. Jeff's College in South Africa is a notable accomplishment. This indicates that Zambia can implement a reformed education system that includes A' Level education and examination without extending the duration of secondary school education. Thirdly, the provincial rankings for the 2022 School Certificate pass rate were in line with expectations, with Southern Province consistently performing well and serving as a benchmark for other provinces. Finally, the gender parity index in terms of participation and performance has almost been achieved at this level of education and examination.