THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

STUDENTS' ITEMS RESPONSE ANALYSIS REPORT ON FORM TWO NATIONAL ASSESSMENT (FTNA) 2023

WOODWORK AND PAINTING ENGINEERING

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074 WOODWORK AND PAINTING ENGINEERING

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TABLE OF CONTENTS

FOREWORD

This report presents Students' Items Response Analysis (SIRA) report on Form Two National Assessment in the subject of Woodwork and Painting Engineering which was conducted in November 2023. The report aims to provide feedback to education stakeholders on the factors that contributed to the students' performance in the Woodwork and Painting Engineering subject.

The Form Two National Assessment (FTNA) is a formative evaluation that intends to monitor students' learning outcomes and provide feedback that teachers, students and other education stakeholders can use to improve the teaching and learning process. This analysis shows justification of the students' performance in the Woodwork and Painting Engineering subject. The students who attained high scores demonstrated their ability to understand the demands of the questions as well as enough knowledge, skills and competence in the subject matter. Students who scored low marks lacked adequate knowledge of the concepts tested and failure to respond well according to the demands of the questions.

Furthermore, the report identifies students' strengths and weaknesses, which, in turn, will help to improve learning before sitting for their Certificate of Secondary Education Examination (CSEE). Also it will help teachers to identify challenging areas and act appropriately during the teaching and learning process.

The National Examinations Council of Tanzania (NECTA) expects that the feedback provided in this report will enable education stakeholders to take proper measures to improve teaching and learning of Woodwork and Painting Engineering the subject. Consequently, students will be able to acquire the knowledge, skills, and competence indicated in the syllabus for better performance in future assessments and examinations.

The Council appreciates contributions of all those who participated in preparing this report.

Dr. Said A. Mohamed
EXECUTIVE SECRETARY

1.0 INTRODUCTION

This report provides a detailed analysis of the students' performance on Form Two National Assessment (FTNA) 2023 in Woodwork and Painting Engineering subject. The assessment adequately covered the Form Two Syllabus for Technical Secondary School Education issued in 2019 and the Examination Format issued in 2021. The Woodwork and Painting Engineering assessment paper consisted of 10 questions in three sections namely A, B and C.

Section A consisted of multiple-choice and matching item questions. Question one (1) consisted of ten (10) multiple choice items, and each item weighing one (1) mark, making a total of 10 marks. Question two (2) consisted of five (5) matching items, each weighing one (1) mark, making a total of 5 marks. Multiple-choice items were composed from the following topics: *Introduction to Painting*, *Workshop Orientation*, *Safety Rules and Management, Painting Materials, Colour*, *Water Paints, Tie and Dying, Oil Paints*, *Painting Techniques*, and *Varnishes and Finishes* while matching items were drawn from the topic of *Water Paint*.

Section B comprised of seven (7) short answer questions (questions 3 to 9) derived from various topics namely: *Introduction to Painting, Workshop Orientation, Safety Rules and Management, Painting Materials*, *Water Paints* and *Painting Techniques.* Each of these questions carried 10 marks to make a total of 70 marks in the section. Section C which comprised only one question from the topic of *Varnishes and Finishes.* This question had 15 marks.

A total of 192 students sat for this assessment. The performance was generally average, where by 121 (63.02%) of the students passed with average and good performance while 71 (39.98%) of the students failed. The distribution of scores and students' performance in the Woodwork and Painting Engineering subject is shown in Table 1.

Table 1: General Students' Performance in Woodwork and Painting Engineering Subject

Scores	Remarks	General Students' Performance	
		Number	Percentage (%)
0 – 29	Weak	71	36.98
30 - 64	Average	120	62.50
65 – 100	Good	1	0.52
Total		**192**	**100**

Among the students who sat for the Woodwork and Painting Engineering assessment in the year 2023, only 1 student scored grade B while 120 students scored grades C and D, and the remaining 71 students failed by scoring grade F.

The range of the student's performance for each question was determined and an analysis of the strengths and weaknesses of the students' responses was carried out. Extracts of student's good or poor responses are used to illustrate the cases presented. At the end of this report, a conclusion and recommendations made to help education stakeholders to take necessary measures to improve future students' performance.

2.0 THE ANALYSIS OF THE STUDENTS' RESPONSES IN EACH QUESTION

2.1 Section A: Multiple Choice and Matching Items

This section consisted of two (2) questions. Question one (1) had ten (10) multiple-choice items, each carrying 01 mark to make a total of 10 marks. Question two (2) had five matching items, each carrying 01 mark to make a total of 05 marks. The score ranges used for grading students' performance on each question have been shown.

2.1.1 Question 1: Multiple Choice Items

A total of 192 (100%) students attempted the question, whereby 40 (20.83%) scored from 0 to 2 marks, 145 (75.52%) scored from 3 to 6 marks while 7 (3.65%) scored from 7 to 10 marks. The performance on this question was good since 152(79.17%) of the students who attempted this question scored from 3 to 10 marks. Figure 1 summarizes the performance of the students on

this question.

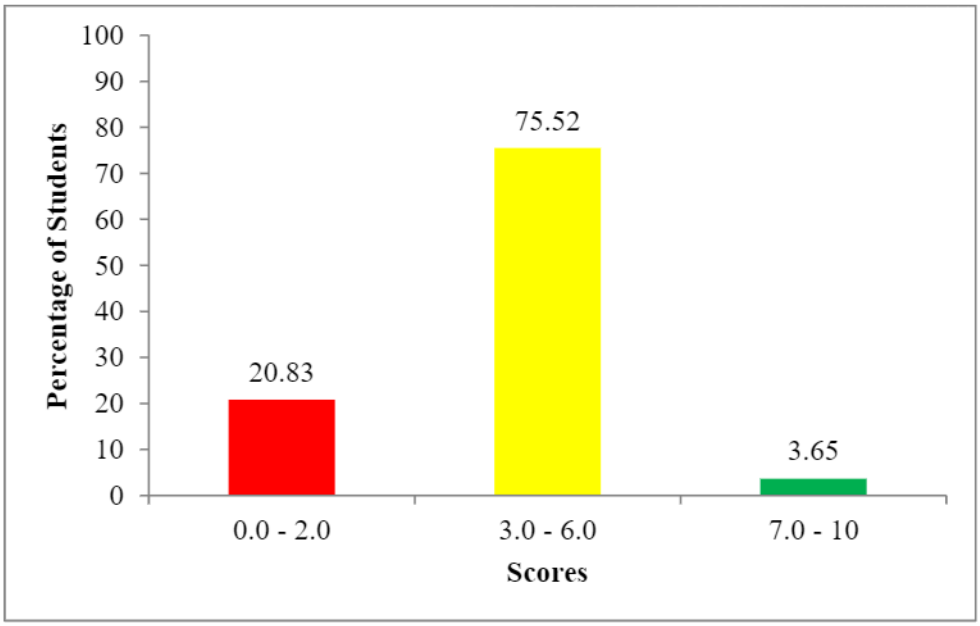


Figure 1: Students' Performance in Question 1.

The strengths and weaknesses of the students in choosing correct answers for individual items in the question are analysed as follows:

Item (i) was set from the topic of *Introduction to Painting*. Students were required to identify the type of paint used as a floor finish. The question intended to measure students' ability to identify different types of paints and their uses. The question was:

Select the proper type of paint to be used as a floor finish material.

A	*Oil paint*	*B*	*Water paint*
C	*Epoxy paint*	*D*	*Bituminous paint*

The correct response for this item was C, 'Epoxy paint'. The students who opted for this alternative had enough knowledge of floor finishes paints. Alternatively, students who chose alternative A, 'Oil paint', were incorrect because oil paint is primarily used for both exterior and interior metal and wood surfaces. Similarly, students who opted for 'Water Paint' were incorrect because the water paint is mainly for walls. Furthermore, students who selected for alternative D, 'Bituminous paint', was incorrect because bituminous paint is mainly used for coating roofs and storage tanks for water proofing purposes.

Item (ii) was developed from the topic of Workshop Orientation. Students were required to identify the equipment used to check if the hanged wallpaper ran horizontally. The purpose of the question was to assess the students' knowledge on the use of levelling tools. The question was:

The equipment used to check if the wallpaper run horizontally after hanging is called

A	*Plumb bob*	*B*	*Ruler*
C	*Square*	*D*	*Spirit level*

The correct alternative was D, '*Spirit level*'. The students who opted for alternative D were aware of the uses on different hand tools. Those who opted for alternative A, '*Plumb bob*', were incorrect because the tool is used to determine vertical alignment of the walls. Similarly, alternative B, '*Ruler*', is not the correct answer because it is primarily measures distances. Additionally, Alternative C, '*Square*', is also incorrect because it checks the correctness of right angles in building works.

Item (iii) was constructed from the topic of *Safety Rules and Management* whereby students were required to identify unsafe actions when operating a spindle machine. The question intended to assess the students' awareness of the safety rules and management taken while operating a spindle machine. The question was following:

Which one of the following is the unsafe action during operating the spindle machine?

A *Tightening the spindle nut*
B *Checking that all attachment and guards are firmly secured*
C *Feeding the work into the cutter in the same direction to the cutter rotation*
D *Feeding the work into the cutter in the opposite direction to the cutter rotation*

The correct response was C, '*Feeding the work into the cutter in the same direction to the cutter rotation*'. Students who opted for this alternative were correct because this keeps a machine pushback from causing the work piece to be drawn into the cutter. These students had enough knowledge of how to avoid accidents in the woodwork workshop. Options A, B and D were not correct because these are safe practices necessary for proper machine operation.

Item (iv) was developed from the topic of *Painting materials*. Students were required to select paint suitable for painting a school. The question intended to assess students' ability to identify paints regarding their kinds and application. The question stated:

You are given a task to paint a school, which category of painting would you use?

A *Water paint and Oil paint*
B *Oil paint and Aluminium paint*
C *Oil paint and Bituminous paint*
D *Oil paint and Silicate paint*

The correct alternative was A, '*Water paint and Oil paint*'. Students who opted for this alternative were aware that water-based paints are safer, easier to apply, clean, and versatile, while oil-based paints offer durability and resistance to wear. Both types of paint ensure a high quality and long-lasting finish suitable for a school environment.

Students who opted for alternative B, '*Oil paint and Aluminum paint*', were incorrect because aluminum paint is suitable in areas prone to weather exposure. Similarly, students who selected for alternative C, '*Oil paint and bituminous paint*', were incorrect because bituminous paint is used in submerged structures for water proofing concrete, wood and water tanks. Furthermore, students who chose for alternative D, '*Oil paint and Silicate paint*' were incorrect because silicate paint is used on mineral substrate.

Item (v) was set from the topic of *Colour*. Students were required to select the suitable set of colours that would be appropriate for painting the building with a natural colour. This question is intended to measure students' awareness of the suitability of colour applications. The item stated:

Which set of colour would be appropriate for painting the building with the natural colour?

A *Blue and green* *B* *Black and white*
C *Red and white* *D* *Yellow and purple*

The correct response was alternative A, '*Blue and green*'. These colours connects natural elements like the sky and vegetation and when combined in the appropriate ways they provide a balancing and peaceful impact. Students who selected for alternative B, *'Black and white* were incorrect because black and white create unusual contrast and disrupt the natural colour palette.

Similarly, who chose for alternative C, '*Red and white*' were incorrect because these bright colours' conflicting qualities could throw off the environment's harmony and beautiful balance. Furthermore, students who opted for alternative D, '*Yellow and purple,*' were incorrect because these colours complement the natural environment and might clash or appear out of place.

Item (vi) was developed from the topic of *Water Paints*. Students were required to identify the finishing material that is used on the surface of the wood to enhance the beauty of the grain. The question was:

The official finishing material that is used on the surface of the wood to enhance the beauty of the grain markings is called

A	*polish*	*B*	*sealer*
C	*shellac*	*D*	*stain*

The students with adequate knowledge of water paints opted for the correct alternative D, '*Stain*'. These students were aware that stain's application to wood adds colour and depth while allowing the natural grain patterns to remain visible. Students who opted for A, '*polish*', B, '*sealer*' and C, '*shellac*', were wrong because they failed to recall that shellac, polish and sealer are distinct finishing materials that can be applied to wood for additional uses like protection or gloss.

Item (vii) was constructed from the topic of *Tie and Dying.* Students had to choose a substance mixed into water aniline dyes to fix the colour into an appropriate design when creating batik. The question intended to assess students' knowledge of the application of dyes on the required surface. The question stated:

Which substance would you add to the water aniline dyes to fix the colour into a proper design making batik?

A	*Turpentine*	*B*	*Sprit*
C	*Vinegar*	*D*	*Water*

The correct alternative was C, '*Vinegar*'. Students who opted for the correct alternative were familiar with the reaction of vinegar to the dyes. Vinegar, containing acetic acid helps to seal the dye in fabric and prevent it from bleeding onto other garments. Students who selected alternative A, '*Turpentine*, were incorrect because turpentine is a solvent used for thinning oil-based paints. Similarly those who opted for alternative B, '*Spirit*', was

wrong because spirit is a solvent used for thinning oil-based paints. All students who opted for alternative D, '*Water*', were incorrect because water is required for washing the dyed materials to achieve desirable fastness properties. Generally, those who failed to provide the correct answer had no or little knowledge on the topic of Tie and Dying.

Item (viii) was extracted from the topic of *Oil paints,* where students had to identify a binder used for temporary painting works. The question was:

Which one is the most useful binder used for temporary painting works?

A	*Turk oil*	*B*	*Nut oil*
C	*Poppy oil*	*D*	*Linseed oil*

The correct alternative was B, '*Nut oil*'. Students who opted for this alternative were correct because oil-based paints use nut oil to provide the right consistency, which has a fast drying time and high flow rate. Those who opted for alternative A, '*Turk oil*', were incorrect because it is particularly useful for producing fine brushwork, soft washes, and glazes.

Those who opted for alternative C, '*Poppy oil*', were incorrect because it is used as a slow-drying medium to improve the transparency and flow of colours. Likewise, students who opted for alternative D, '*Linseed oil*', were incorrect because linseed oil serves as a medium to improve the flow, clarity, and dilution of oil paints. Furthermore, linseed oil is used to prime canvases and other painting surfaces to create a smooth and durable base.

Item (ix) was developed from the topic of *Painting techniques.* Students were required to identify the correct way of applying paint to surfaces using a roller. The question was:

Form two students were painting a surface of classroom using a roller. What will happen if they apply too much pressure to the roller?

A *It will stick to the surface*
B *It will slide along the surface*
C *It will roll over a surface*
D *It will form roller marks*

The correct alternative was B, '*It will slide along the surface*' as excessive pressure applied during painting may cause the paint to slide down the roller's surface resulting in uneven squeezing out of the paint. Students who opted for alternative A, '*It will stick to the surface*' were incorrect because

paint sticks to a surface due to adhesion that is the ability of the paint to bond to the surface.

Those students who opted for alternative C, '*It will roll over a surface*' were incorrect because paint rolls over a surface due to the properties of the paint and the surface. When using a roller, the paint is spread evenly over the surface as the roller is moved back and forth, allowing for a smooth application. Likewise, those students who opted for D, '*It will form roller marks*' were incorrect because if the paint dries too quickly, it may not level out properly, leaving behind roller marks and also using a low-quality roller or one with a worn-out nap can result in uneven paint application and roller marks.

Item (x) was set from the topic of *Varnishes and Finishes*. Students were required to identify the medium abrasive material for finishing work. The question asked:

A woodwork teacher assigned a form two student to order medium abrasive material at the nearest hardware for varnish finish work. Recommend the most probable range of mesh size which is suitable to be ordered.

A	*50 - 80*	*B*	*20 - 30*
C	*38 - 40*	*D*	*100 - 150*

The correct alternative was A, '*50 - 80*' represents the range commonly associated with medium abrasives, with the number 60 falling within this range. However, students who selected alternative B, '*20-30*' and C, '*38-40*' were incorrect because abrasive materials with grit sizes less than 40 do not fall into category of medium abrasives. Likewise, students who opted for D, '*100-150*', were incorrect because this range represents the soft abrasive material.

2.1.2 Question 2: Matching Items

This question consisted of five matching items derived from the topic of *Painting Materials*. The students were required to match function of the component of water-based paint described with their corresponding responses by writing the letter of the correct response below the corresponding item number in the table provided. The question was as follows:

Match the function of the component of water based paint described in ***List A*** *with the correct component in* ***List B*** *by writing a letter of the correct response below the item number in the table provided.*

List A	***List B***
(i) Makes up the colour of a coating and helps the film former to protect the substrate.	*A Acrylic primer*
(ii) Converts the liquid coating to a solid dry film, binds the pigment particles together and helps the coating to adhere to the surface.	*B Binder*
(iii) Allows certain coatings to be applied with ease and give greater adhesive properties to undercoats.	*C Drier*
(iv) Added to the paint in order to make it more fluid and bring it to a workable consistency.	*D Extender*
(v) Added to prevent the coat to frees and control mould growth and pigment stability.	*E Pigment*
	F Sealer
	G Stain
	H Thinner

A total of 192 (100%) students attempted this question. Out of whom, 70 (36.46 %) scored from 0 to 1 mark, 81 (42.19 %) scored from 2 to 3 marks and 41 (21.35%) scored from 4 to 5 marks out of 5 marks allocated. Their overall performance on the question is summarized in Figure 2.

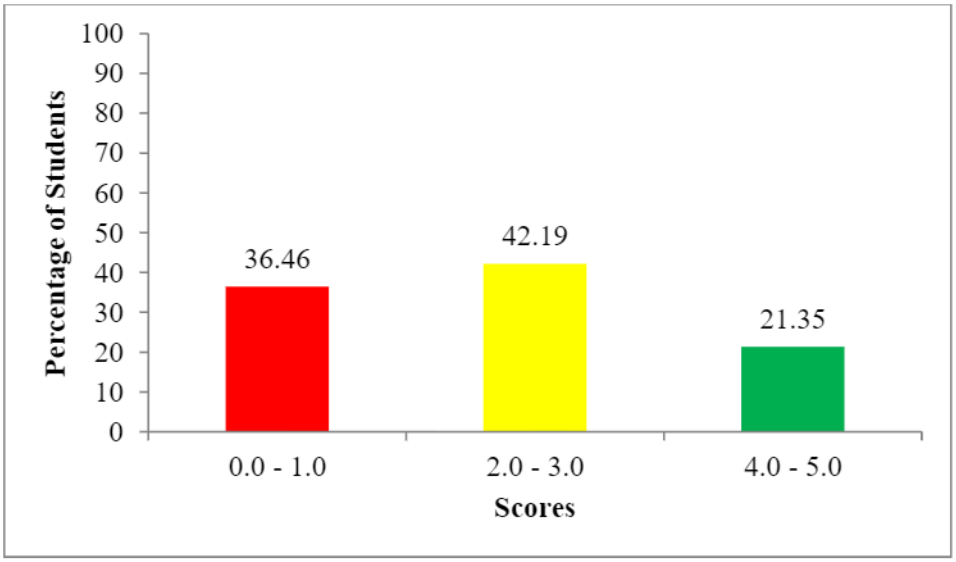


Figure 2: Students' Performance in Question 2

Generally, the students' performance on this question was good since 122 (63.54%) scored above average. This indicates the topic *Painting Materials*

was well covered and clearly understood. Further analysis on the students' performance in each item is as follows:

Item (i), required the students to identify the component which makes up the colour of a coating and helps the film former to protect the substrate. The correct response was *E, 'Pigment'*. The majority of students answered this item correctly, indicating their adequate knowledge of the constituents of oil paints. However, a few students selected option H, *'Thinner'*, indicating a misunderstanding as thinner is a solvent used to reduce viscosity.

In item (ii), the students were required to match the component that converts the liquid coating to a solid dry film, binds the pigment particles together and helps the coating to adhere to the surface. The correct response was *B, 'Binder'*. The students, who responded correctly to this item, understood that a binder is a substance that hold together the pigments and other components of a paint mixture. This signify that they had sufficient knowledge on the specific concept asked. However, some of the students chose option *G, 'Stain'*. Such students failed to differentiate between the binder and the stain. Stain's application to wood adds colour and depth while allowing the natural grain patterns to remain visible.

Item (iii), students were required to provide a suitable response which matches correctly with the statement *'allows certain coatings to be applied with ease and give greater adhesive properties to undercoats*. The correct response was D, *'Extender'*. Students who matched this correctly demonstrated a clear understanding that an extender is a substance added to paint to modify its flow and drying time.

Item (iv) students were required to identify a component added to the paint to make it more fluid and bring it to a workable consistency. The correct response was H, *'Thinner'*. The analysis of the students' responses indicates that they performed well on this item indicating their good knowledge of painting materials.

Item (v) require the students to recognize a component added to prevent the coat from freeing and control mold growth and pigment stability. The correct answer was *C, Drier*. Most of the students failed this item by choosing H, *'Thinner'*. Such students failed to differentiate between the drier and the thinner. Drier accelerates hardening while thinner reduce viscosity.

2.2 Section B: Short Answer Questions

This section consisted of seven (7) questions constructed from the following topics: *Introduction to Painting; Workshop Orientation; Safety Rules and Management; Painting Materials; Water Paints; Painting Techniques and Varnishes and Finishes*. Each question carried 10 marks, making a total of 70 marks. The score intervals used for grading performance of the students for each question in this section are indicated in Table 2.

Table 2: Score Intervals for Question 3 to 9

Score Range (Marks)	Remarks
0 – 2.5	Weak
3 - 6	Average
6.5 - 10	Good

2.2.1 Question 3: Introduction to Painting

The question had two parts (a) and (b). In part (a), the students were required to state their favorite types of paints and in part (b), the students were required to identify the type of paint with the given characteristics. The question stated:

(a) What is your first six favorite type of paint?
(b) Identify the type of paint which has the following characteristics:
- *(i) Available in powder form.*
- *(ii) Should not be applied during humid and damp weather.*
- *(iii) Applied on the surfaces which are exposed to the acidic gases and steam.*
- *(iv) Possess high covering capacity.*
- *(v) Possess excellent alkali resistance.*
- *(vi) Consisting of oil and a strong drier.*

The data analysis shows that the question was answered by 192 (100%) students and among them, 101 (52.60%) students scored from 3 to 6 marks and 1 (0.52%) student scored from 6.5 to 10 out of 10 marks allocated. However, 90 (46.88%) students scored below 3 marks. Figure 3 shows the performance of the students in this question.

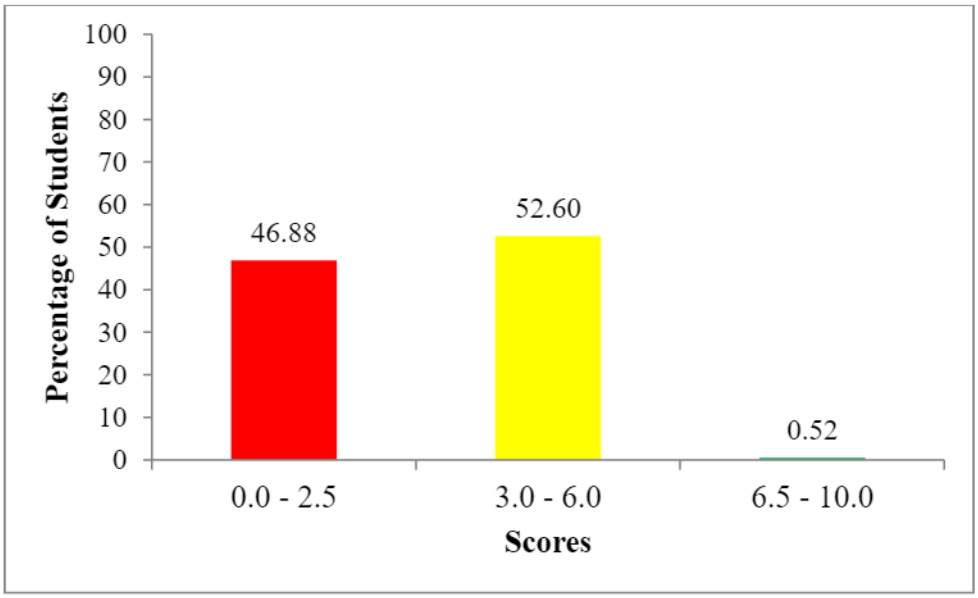
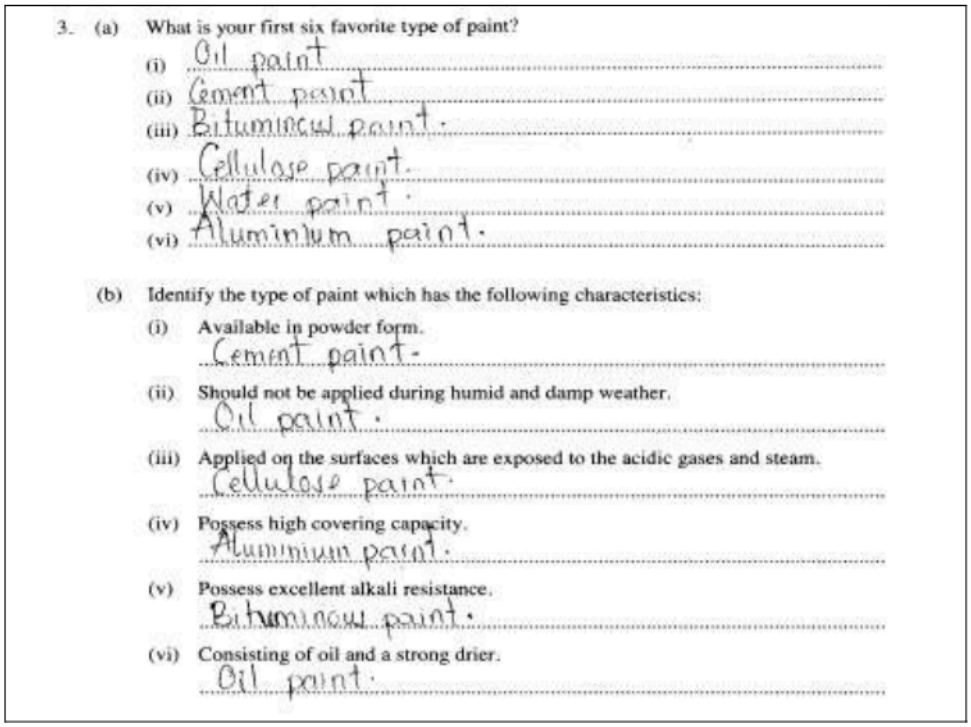


Figure 3: Students' Performance in Question 3

Figure 3 shows that 102(53.12%) students scored 3 marks and above, which indicates average performance. The students who scored average performance were relatively able to give correct responses in both parts (a) and (b) of the questions. In part (a), the majority of the students correctly managed to state the types of favorite paints which, means that they have acquired good knowledge of paints.

In part (b), the majority failed to identify types of paints based on the given characteristics with the exception a few students who scored from 6.5 to 10. These high scoring students demonstrated sufficient knowledge of the characteristics of paints and successfully provided the following characteristics of paint in part (b) of the questions: *(i) Cement paint (ii) Oil paint (iii) Asbestos paint (iv) Aluminum paint (v) Emulsion paint and (vi) Anti-corrosive paint*. Extract 2.1 is a sample of correct responses to the question.


3. (a) What is your first six favorite type of paint?

(i) Oil paint

(ii) Cement paint

(iii) Bitumincw paint.

(iv) Cellulose paint.

(v) Water paint.

(vi) Aluminium paint.

(b) Identify the type of paint which has the following characteristics:

(i) Available in powder form.
Cement paint.

(ii) Should not be applied during humid and damp weather.
Oil paint.

(iii) Applied on the surfaces which are exposed to the acidic gases and steam.
Cellulose paint.

(iv) Possess high covering capacity.
Aluminium paint.

(v) Possess excellent alkali resistance.
Bitumincw paint.

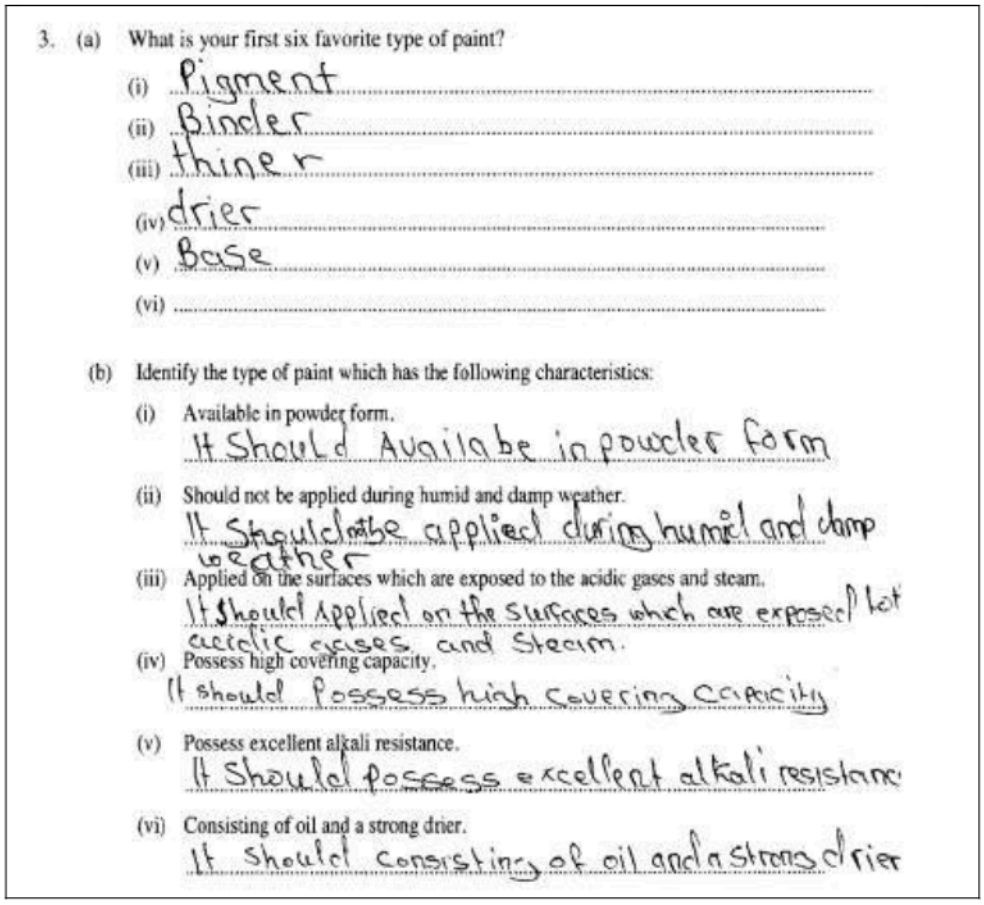
(vi) Consisting of oil and a strong drier.
Oil paint.

Extract 2.1: A sample of correct responses to Question 3

Extract 2.1 shows a sample of responses from a student who managed to give favorite types of paint in part (a). He/she also identified the type of paint with the given characteristics in part (b) of the question.

Further analysis reveals that 90(46.88%) students performed poorly by attaining a score range of 0 to 2.5 marks. These students were able to identify a few types of favorite paint in part (a), their responses mixed up with types of paint regarding colours for example one of the students wrote; *water paint, red paint, oil paint* and *yellow paint.* Colour is not one of the factors for the classification of paints.

However, these students completely failed part (b) of the question. Furthermore, many of the students who scored a 0 mark decided to write anything related to paint, while others copied answers from other questions without considering the requirements of the question. This poor performance was attributed to insufficient knowledge of the types and characteristics of paints. Extract 2.2 provides a sample of incorrect responses to the question.


3. (a) What is your first six favorite type of paint?

(i) Pigment

(ii) Binder

(iii) thiner

(iv) drier

(v) Base

(vi) .....

(b) Identify the type of paint which has the following characteristics:

(i) Available in powder form.

It Should Availabe in powder form

(ii) Should not be applied during humid and damp weather.

It Shouldnbe applied during humid and damp weather

(iii) Applied on the surfaces which are exposed to the acidic gases and steam.

It Should applied on the surfaces which are exposed to acetic acises and steam.

(iv) Possess high covering capacity.

It should Possess high covering capacity

(v) Possess excellent alkali resistance.

It Should possess excellent alkali resistance

(vi) Consisting of oil and a strong drier.

It Should consisting of oil and a strong drier

Extract 2.2: A sample of incorrect responses to Question 3.

Extract 2.2 demonstrates a sample of incorrect responses from a student who copied question six ingredient of paint to answer part (a). He/she also repeated the sentences of the question instead of providing a response in part (b) of the question.

2.2.2 Question 4: Workshop Orientation

The question required the students to recommend four different kinds of blades suitable for use in the workshop and explaining the usage of each. This question was set from the topic of Workshop Orientation.

The question was attempted by 192 (100%) students, and 128 (66.67%) students scored from 0 to 2.5 marks. The students who scored between 3 and 6 marks were 37 (19.27%), while 27 (14.06%) of students scored from 6.5 to 10 marks. Figure 4 represents the students' performance in this question.

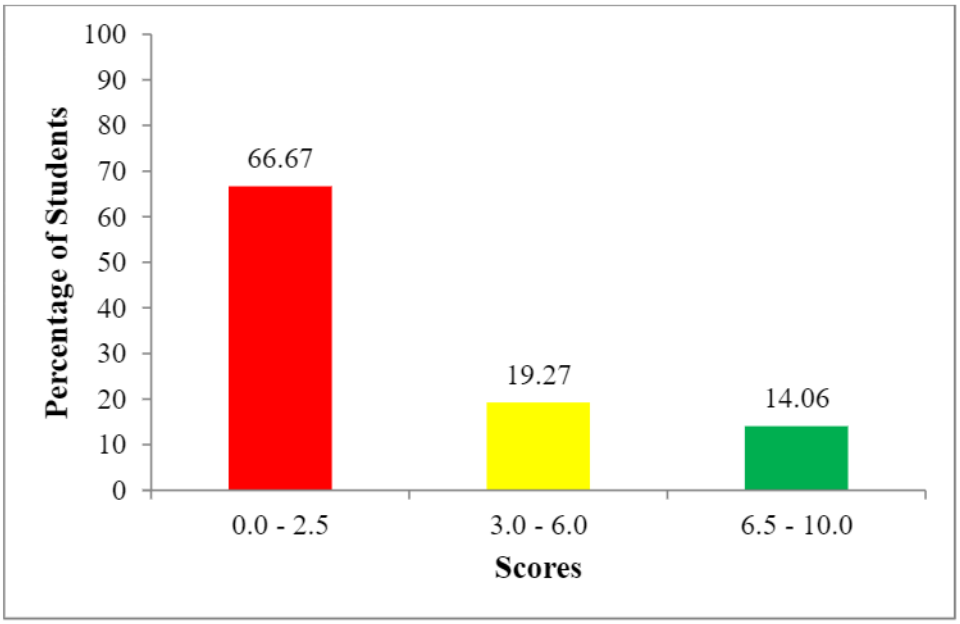


Figure 4: Students' Performance in Question 4

Generally, the students' performance in this question was weak, as 128 (66.67%) students scored from 0 to 2.5 marks. The majority of these students failed to distinguish between blades and saws. They explained about types and uses of saws instead of blades. For example, one of the students recommended the type of blades as *handsaw, circular saw, chain saw,* and *band saw*. These Students were not aware that saws are tools used for cutting materials such as wood, metal, or plastic. They consist of a blade with teeth attached to a handle or frame. Students who scored 0 write irreverent responses and others skipped the question. This is an indication that students in this category lacked knowledge of workshop tools. Extract 3.1 is a sample of incorrect responses provided by one of the students who attempted the question.

4. Recommend four types of blade that can be used in the workshop and give brief description on how to use each of them.

(a) Slinder blade - Slinder blade this is the type of blade which is used in the workshop for equalizing the timber.

(b) Knife blade. Knife blade this is the type of blade which is used in the workshop for removing unwanted pieces.

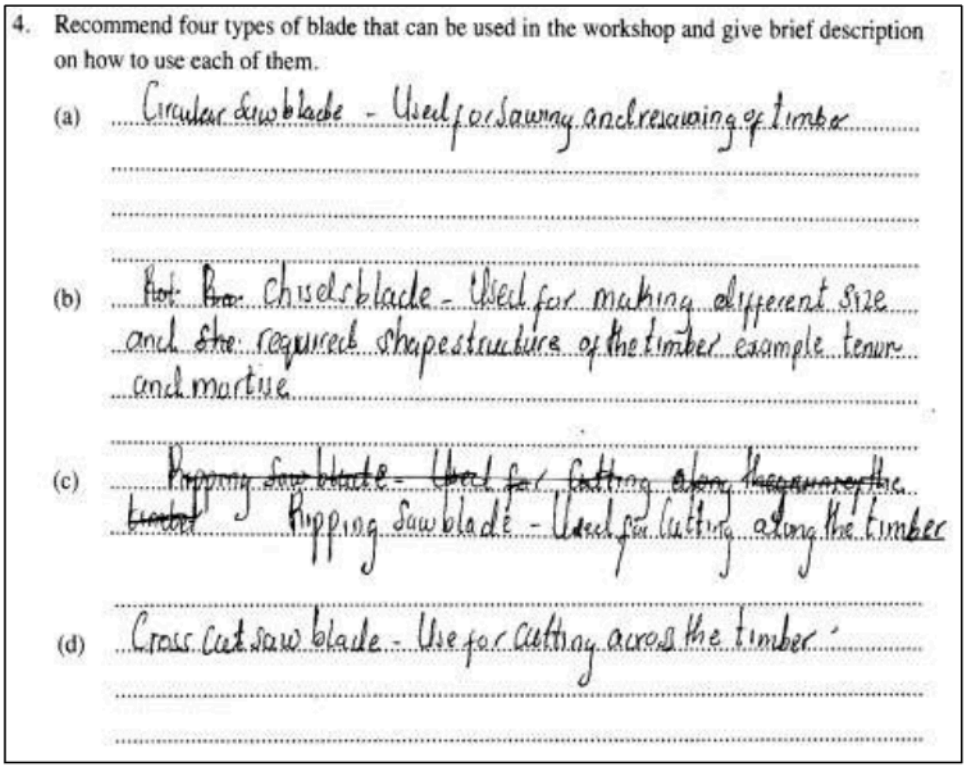
(c) Rotating blade - Rotating blade this is the type of blade which is used in the workshop for dividing a piece of wood into different pieces.

(d) Drilling blade. Drilling blade this is the type of blade which is is used in the workshop for the purpose of making holes on a piece of wood.

Extract 3.1: A sample of incorrect response to Question 4

Extract 3.1 is a sample of student responses who managed to recommend type of saw by considering types of machines in a woodwork workshop.

Despite of poor performance of the students in this question 64(33.33%) students scored 3 marks and above. This shows that, they clearly understood the topic of workshop orientation and were able to explain types of blades and their uses. Extract 3.2 shows a sample of correct responses from one students.


4. Recommend four types of blade that can be used in the workshop and give brief description on how to use each of them.

(a) Circular saw blade - Used for Sawing and resawing of timber

(b) Flat Bar Chisel blade - Used for making different size and the required shape structure of the timber example tenon and mortise

(c) ~~Ripping Saw blade - Used for cutting along the grain of the timber~~ Ripping Saw blade - Used for cutting along the timber

(d) Cross cut saw blade - Use for cutting across the timber.

Extract 3.2: A sample of correct response to Question 4

Extract 3.2 is a sample of students' responses who managed to recommend different kinds of blades suitable for use in the workshop and explaining the usage of each.

2.2.3 Question 5: Safety Rules and Management

The students were required to use a well-labeled sketch to elaborate on how they would arrange the machines to comply with the safety regulations of the company. This question was set from the topic of Safety Rules and Management. It aimed to assess students' capability to create a safe work environment by establishing the appropriate arrangement of tools, equipment, and machines.

The question was attempted by 192 students, of whom 135 (70.31%) scored from 0 to 2.5 marks. The students who scored from 3 to 6 marks were 48 (25.00%), while 9 (4.69%) students scored from 6.5 to 10 marks. Figure 5 represents the students' performance in this question.

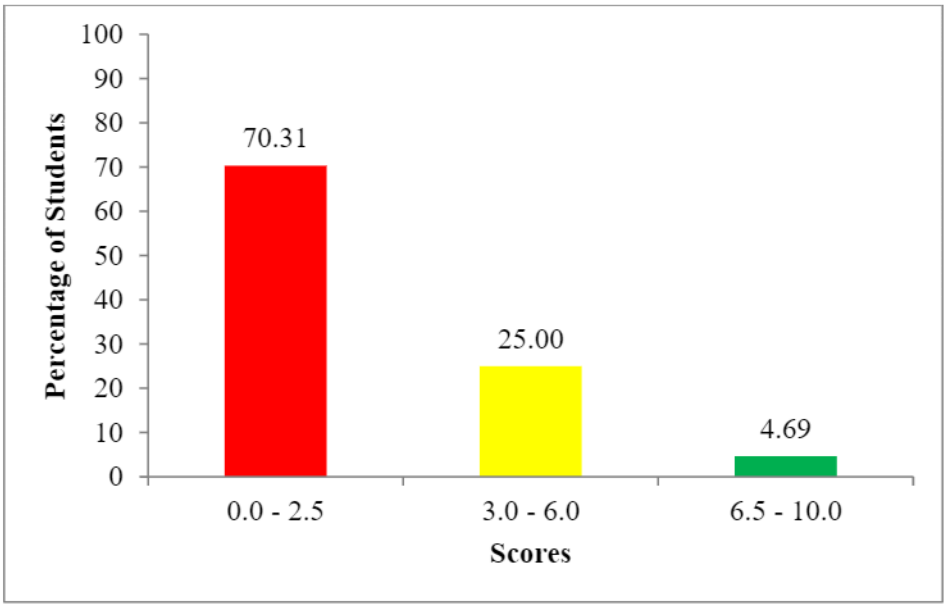
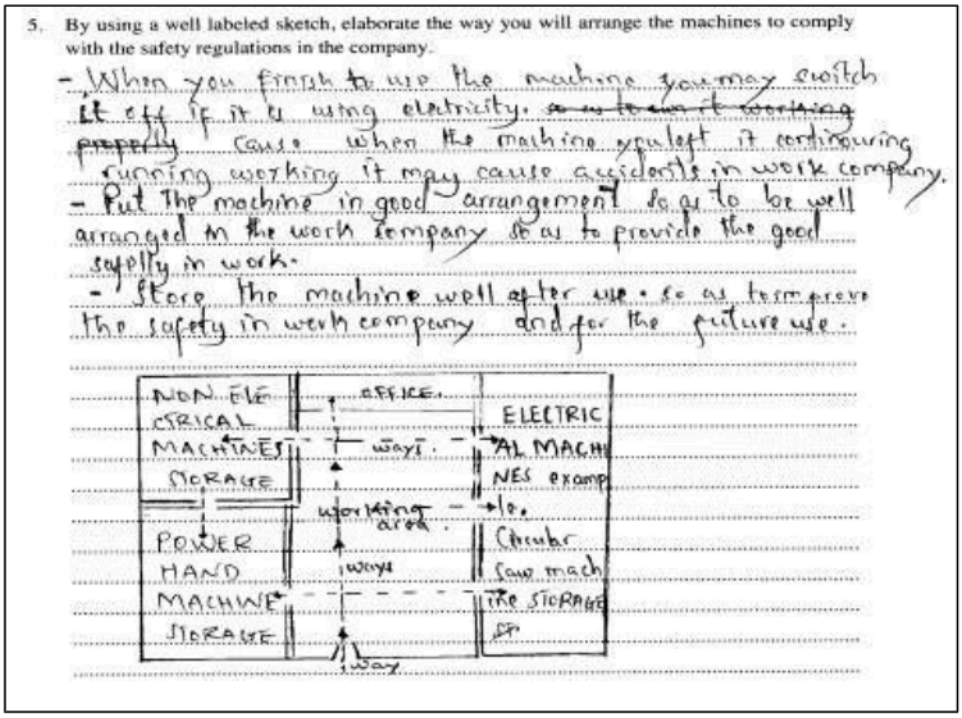


Figure 5: Students' Performance in Question 5

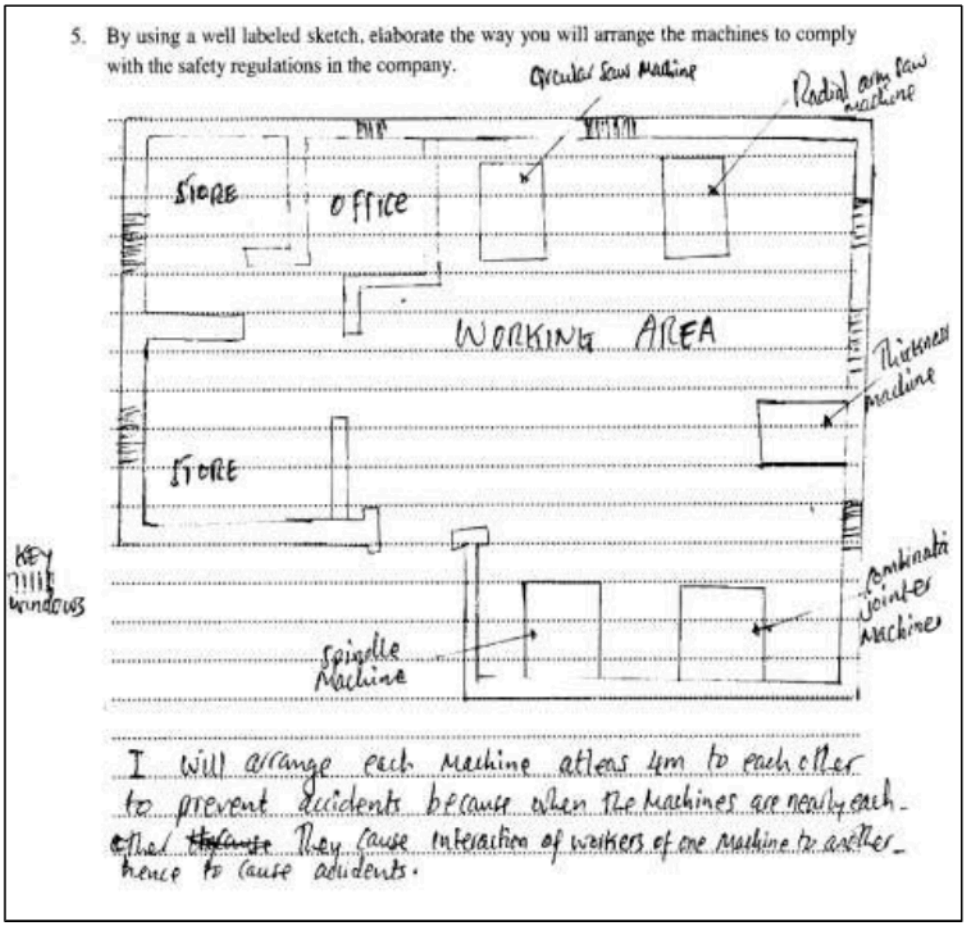
Figure 5 shows that the students' performance in this question was weak since 135(70.31%) students scored from 0 to 2.5 marks. Data analysis shows that among the 135(70.31%) students who scored low marks 107(55.73%) percent scored 0. Father analysis reveals that the majority of students who scored low marks faced difficulties in answering the question. These students were able to identify some machines typically found in a woodwork workshop but they failed to draw correctly the arrangement of the machines to comply with safety regulations resulting to irrelevant responses. Many of the students who scored 0 marks misinterpreted the requirements of the question as they wrote general safety precautions when operating machines in a woodwork workshop. Extract 4.1 is an example of incorrect responses from the student who attempted this question.



Extract 4.1: A sample of incorrect responses to Question 5

Extract 4.1 is a sample of student's responses who identified areas and machines of a workshop but failed to sketch the arrangement of the machines to comply with the safety regulations of the company.

On the other hand, 57(29.69%) students scored pass marks and above. This is an indication that these students understood well the topic of safety rules and management. These students successfully identified the necessary areas and machines required in a woodwork workshop. Key areas in the workshop include a timber store, marking out area assembly area and finishing area. The essential machines for woodworking include radial arm saws, circular saws, surface plane thickness, bend saws, moulding machines, mortise and drilling machines. These students were able to sketch and outlined a sequence of operations for the woodworking workshop, ensuring safe and efficient completion of woodworking tasks. Extract 4.2 is an example of correct responses from the student who attempted this question.



Extract 4.2: A sample of correct responses to Question 5

Extract 4.2. is a sample of student's responses who managed to sketch the arrangement of machines to comply with the safety regulations of the company.

2.2.4 Question 6: Painting Materials

It consisted of five parts, (a) to (e). Students were required to explain the functions of the given painting material ingredients. The question intended to test the students' ability to recall the application of each painting material ingredient. The question was:

Explain two functions for each of the given painting material ingredients.

(a) Pigment (b) Binder (c) Thinner

(d) Drier (e) Base

A total of 192 students attempted this question among them 64 (33.33%) students scored from 0 to 2.5 marks, 59 (30.73%) students scored from 3 to

6 marks and 69 (35.94%) students scored from 6.5 to 10 marks. Figure 6 shows the trend of the percentage of students' performance in this question.

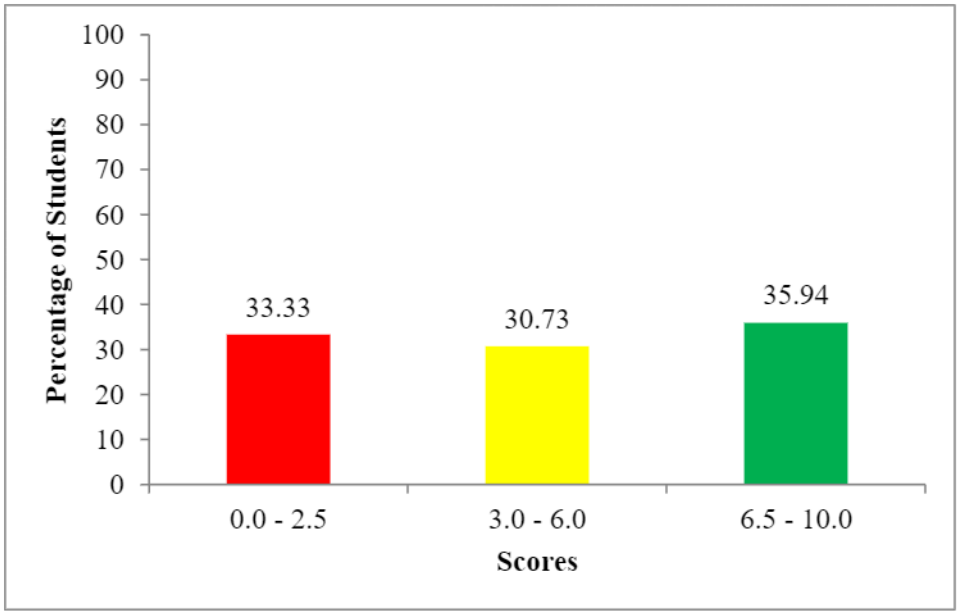
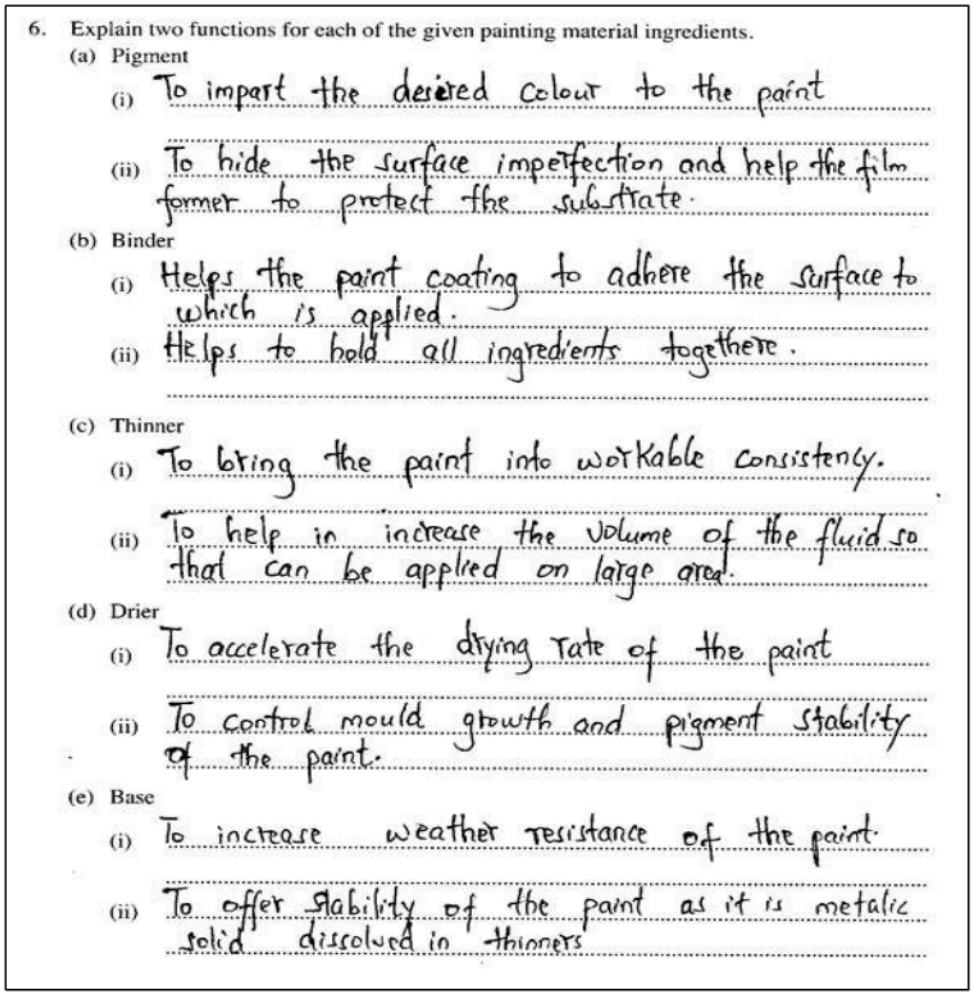


Figure 6: Students' Performance in Question 6

The performance in this question was generally good as 128(66.67%) students scored average and above marks. The analysis reveals that students who scored average marks were able to respond to the question in both parts, alternating from part (a) to part (e). However, these students mixed up the function of *thinner* and *drier* in parts (c) and (d) of the question respectively.

Further analysis reveals that students who scored from 6.5 to 10 marks had sufficient knowledge of the ingredients of paints. These students managed to explain correctly the function of ingredient in part (c), by describing thinner as a dissolving the film-forming material, suspending the pigment, thinning concentrated paints for proper handling and evaporating quickly to facilitate paint drying.

Furthermore, they understood the function of ingredient in part (e), drier and recognizing it is speeding up the drying process of the vehicle in the paint and acting as a catalyst in the drying of painting materials. Extract 6.1 shows a sample of correct responses provided by one of the students.


6. Explain two functions for each of the given painting material ingredients.

(a) Pigment

(i) To impart the desired colour to the paint

(ii) To hide the surface impefection and help the film former to protect the substrate.

(b) Binder

(i) Helps the paint coating to adhere the surface to which is applied.

(ii) Helps to hold all ingredients togethere.

(c) Thinner

(i) To bring the paint into workable consistency.

(ii) To help in increase the volume of the fluid so that can be applied on large area.

(d) Drier

(i) To accelerate the drying rate of the paint

(ii) To control mould growth and pigment stability of the paint.

(e) Base

(i) To increase weather resistance of the paint.

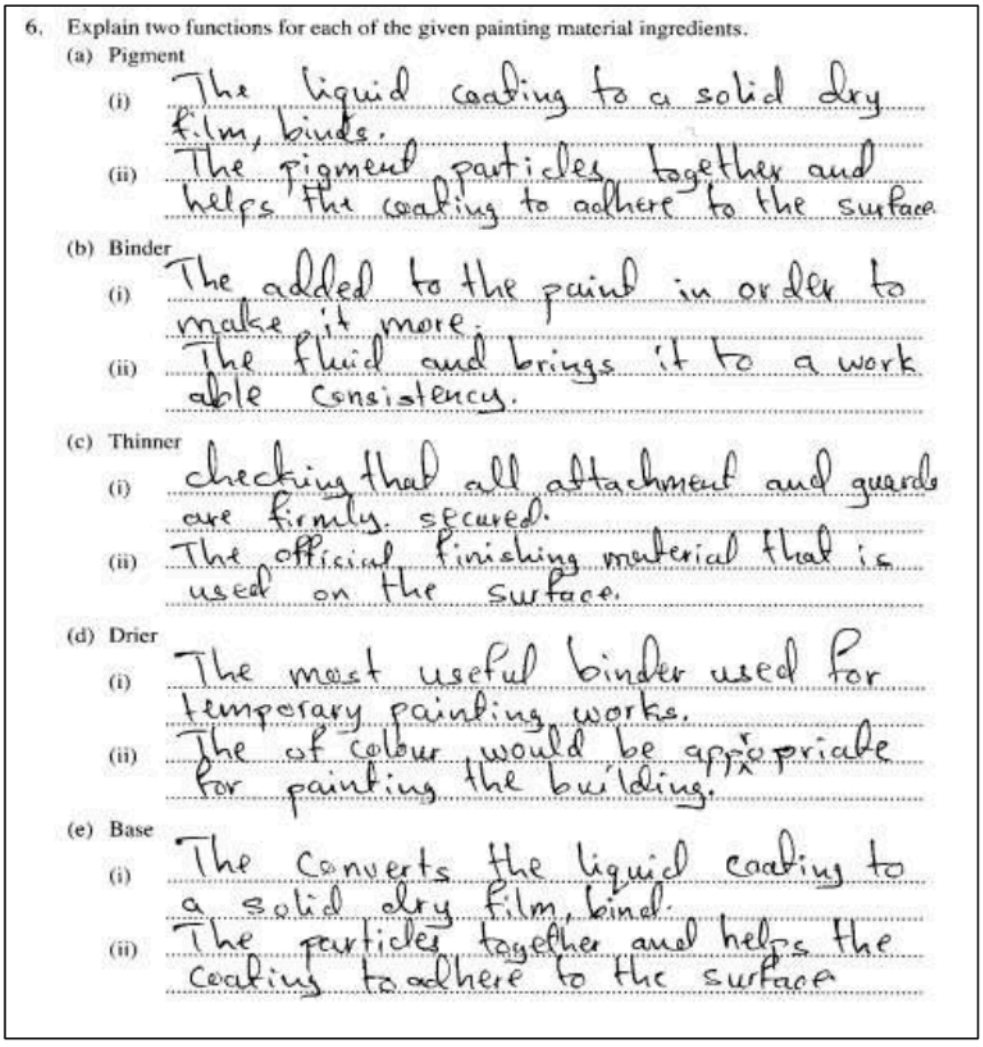
(ii) To offer stability of the paint as it is metalic solid dissolved in thinners

Extract 5.1: A sample of correct responses to Question 6

Extract 5.1 presents a sample of responses from a student who successfully recalled and explained the functions of each paint material ingredient.

Further analysis reveals that 64(33.33%) students performed poorly by attaining the score range of 0 to 2.5 marks. Such students managed partially to explain the function of either one or two components of paints while others failed to give clear responses due to difficulties in the English language despite having ideas on the question.

Many of the students who scored a 0 mark, decided to copy the words from other questions and use them as their response to answer the question. This was attributed by insufficiency knowledge and skills of the topic from which the question was set. Extracts 5.2 provides an example of incorrect responses from a student who attempted this question.



6. Explain two functions for each of the given painting material ingredients.

(a) Pigment

(i) The liquid coating to a solid dry film, binds.

(ii) The pigment particles together and helps the coating to adhere to the surface

(b) Binder

(i) The added to the paint in order to make it more.

(ii) The fluid and brings it to a work able consistency.

(c) Thinner

(i) checking that all attachment and guards are firmly secured.

(ii) The official finishing material that is used on the surface.

(d) Drier

(i) The most useful binder used for temporary painting works.

(ii) The of colour would be appropriate for painting the building.

(e) Base

(i) The converts the liquid coating to a solid dry film, bind.

(ii) The particles together and helps the coating to adhere to the surface

Extract 5.2: A sample of incorrect responses to Question 6

Extract 5.2 shows a sample of responses from one of the students who mixed up the function of ingredients of paints.

2.2.5 Question 7: Water Paints

This question comprised of two parts: (a) and (b). Its aim was to evaluate students' proficiency in identifying types of paints and understanding their respective benefits, taking into account their performance on different surfaces and in various situations. The question was as follows:

ORYX Gas Company advertised a tender of painting a new port building established at Dodoma City. The requirement of the company is to use a type of paint which is less flammable and it's not costfully.

(a) Propose the type of paint which will fit the company requirement.

(b) What are the four benefits of using it in such a situation?

A total of 192 (100%) students attempted this question, out of which 50 (26.04%) scored below 3 marks while 34 (17.71%) scored zero marks. Students who scored from 3 to 6 marks were 52 (27.08%) and 90 (46.88%) scored from 6.5 to 10 marks. Figure 7 represents the students' performance in this question.

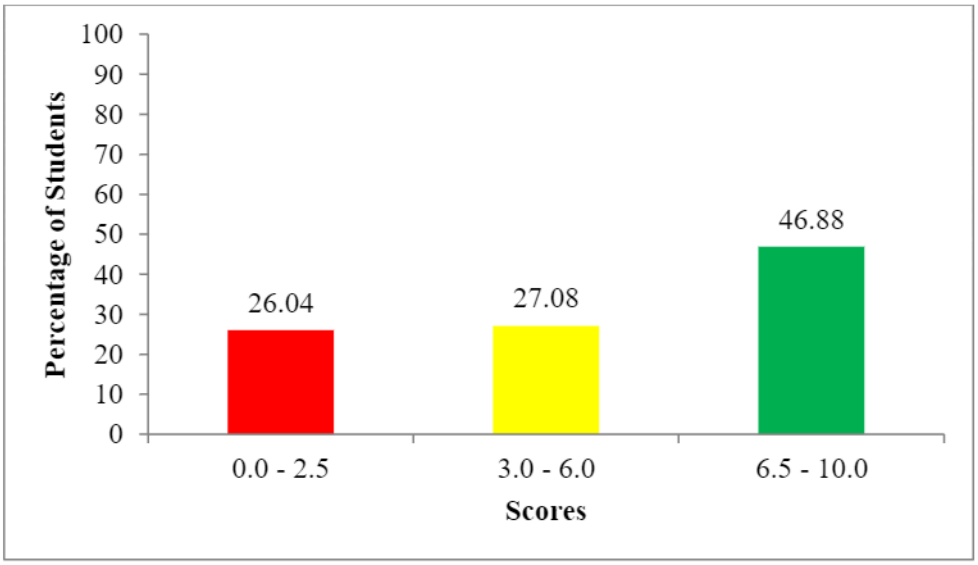
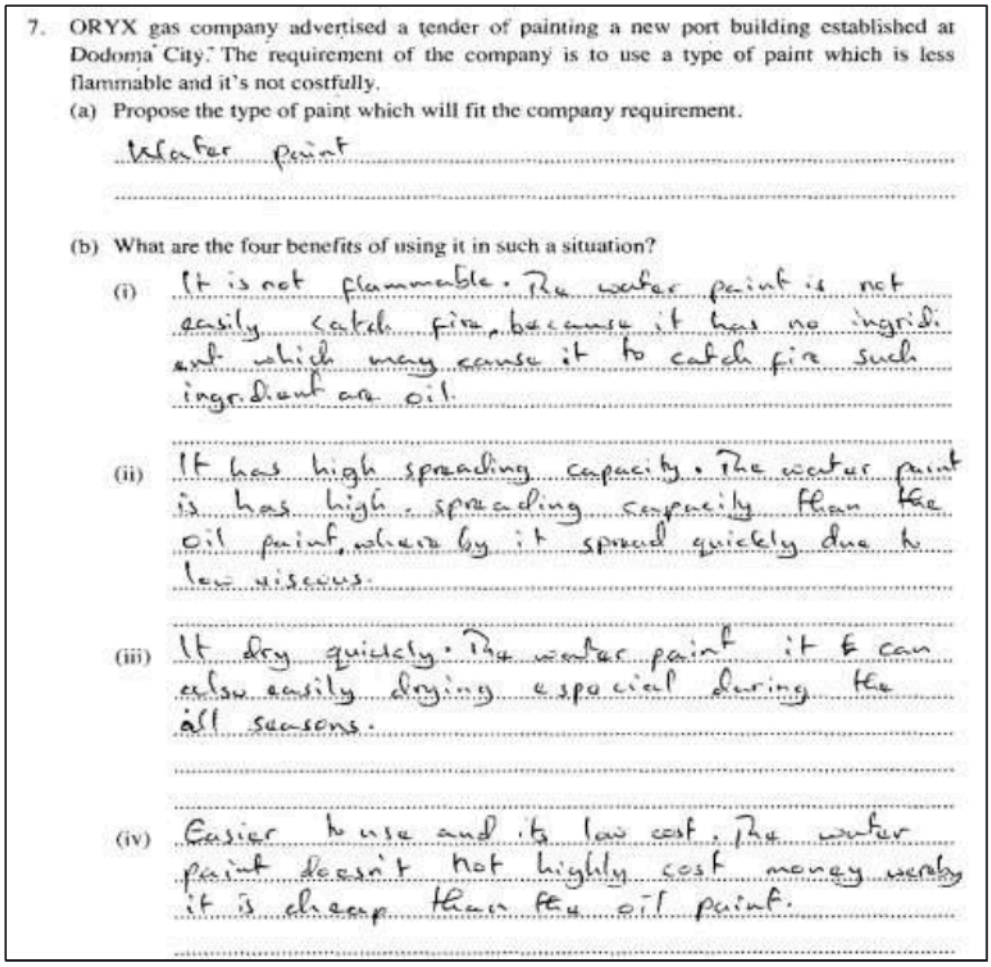


Figure 7: Students' Performance in Question 7

The performance in this question was generally good as 142(73.96%) students scored average and above marks. The majority of the students who scored above average showed to have sufficient knowledge of water paints.

They were able to provide correct responses in parts (a) and (b). They knew water paint is less flammable, and its benefits include reducing flammability risk, increasing safety compliance, improving paint efficiency, easier, less toxic paint gun washing, relatively cheaper, and not affecting environment air quality. Extract 6.1 is an example of correct responses from the student in this question.



7. ORYX gas company advertised a tender of painting a new port building established at Dodoma City. The requirement of the company is to use a type of paint which is less flammable and it's not costfully.

(a) Propose the type of paint which will fit the company requirement.

Water paint

(b) What are the four benefits of using it in such a situation?

(i) It is not flammable. The water paint is not easily catch fire, because it has no ingredient which may cause it to catch fire such ingredient are oil.

(ii) It has high spreading capacity. The water paint is has high spreading capacity than the oil paint, where by it spread quickly due to low viscous.

(iii) It dry quickly. The water paint it is can also easily drying especial during the all seasons.

(iv) Easier to use and its low cost. The water paint doesn't not highly cost money wise it is cheap than the oil paint.

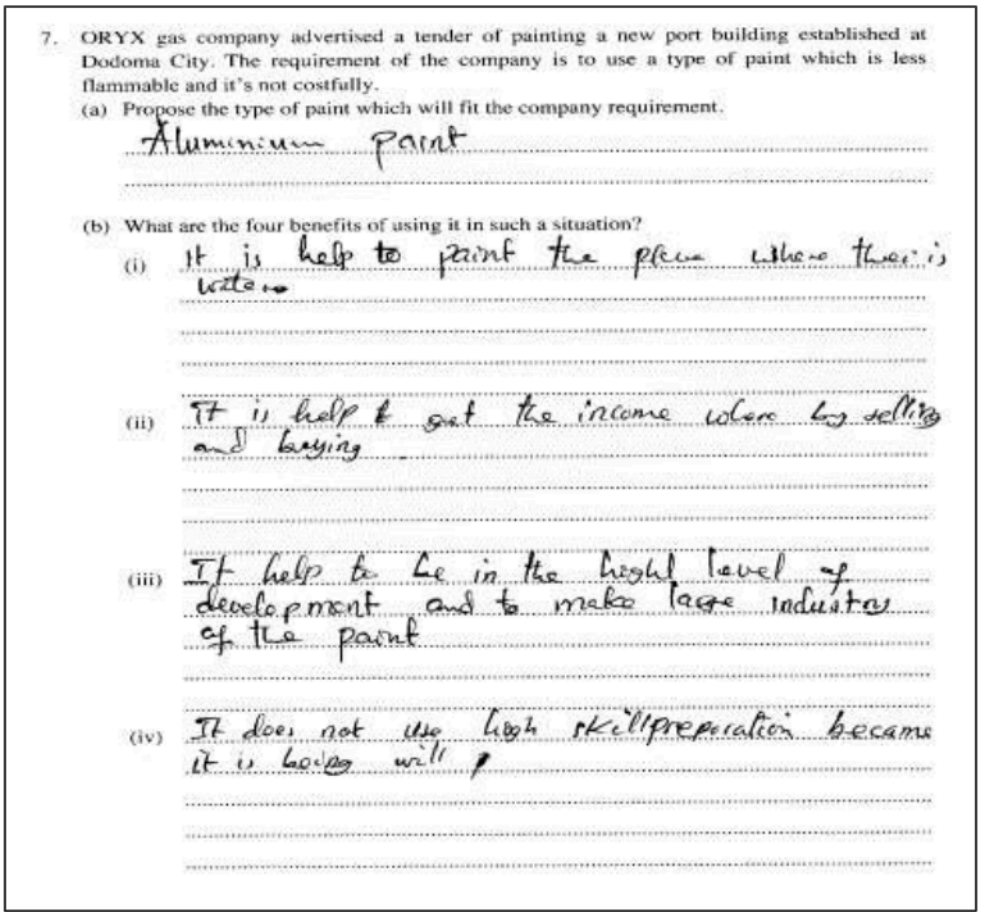
Extract 6.1: A sample of correct responses in Question 7

Extract 6.1 shows a sample of responses from one of the students who proposed the type of required paint and gave the benefits of using it in such a situation.

Further analysis shows that 50(26.04%) students scored poor marks. This is an indication that the students were not knowledgeable about the water paints. In part (a), they failed to identify the type of paint, which is less flammable, and not costfully for the project. For example, some of the students wrote *bituminous paint, aluminium paint and oil paint* while others included *varnish,* which is not a required type of paint.

On the other hand, in part (b), students were required to give four benefits of using a type of paint identified in part (a). Most of them failed simply because they already gave the wrong answer in part (a) which was supposed to be "*Water Paints*". Failure to this question may be attributed to a lack of sufficient knowledge on paints. Extracts 6.2 depict a sample of incorrect

responses from a student who attempted this question.


7. ORYX gas company advertised a tender of painting a new port building established at Dodoma City. The requirement of the company is to use a type of paint which is less flammable and it's not costfully.

(a) Propose the type of paint which will fit the company requirement.

Aluminium paint

(b) What are the four benefits of using it in such a situation?

(i) It is help to paint the place where there is water

(ii) It is help to get the income where by selling and buying

(iii) It help to be in the height level of development and to make large industry of the paint

(iv) It does not use high skillpreperation became it is boiling will

Extract 6.2: A sample of incorrect responses to Question 7

Extract 6.2 is a sample of responses from the student who provide wrong responses in part (a) which lead to end up with wrong responses in part (b) of the question.

2.2.6 Question 8: Painting techniques

The question consisted of two parts, (a) and (b). This question was set on the topic of *Painting Techniques,* whose objective was to assess students' skills in paint procedures. The question was:

Mahenge secondary school plan to change the colour of staff furniture. During implementation, the quality assurance officer found sprayed paint film is dried to a rough gritty finish.

(a) What could be the three causes of this problem?

(b) Recommend four control measures to avoid the problem before painting work is completed.

The analysis of students' performance shows that, out of 192 students who attempted this question, 67 (34.90%) scored from 0 to 2.5 marks, out of these students 44 scored zero. A total of 74 (38.54%) students scored from 3 to 6 marks, whereas 51 (26.56%) scored from 6.5 to 10 marks. The students' performance in this question is summarized in Figure 8.

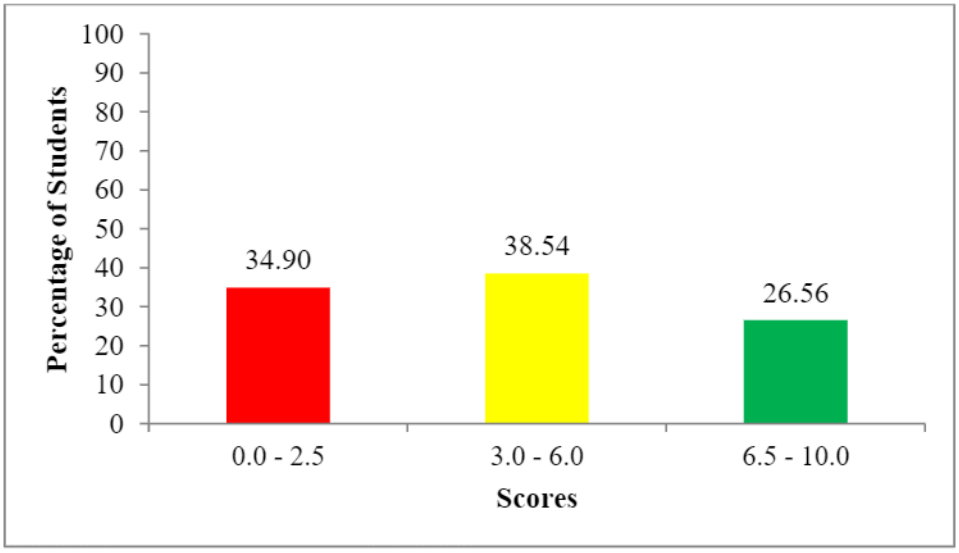


Figure 8: Students' Performance in Question 8

Figure 8 indicates the general performance of this question was good as 125(65.10%) students scored average and above marks. The majority of the students 51(26.56%) who scored higher marks 6.5-10 provided relevant responses as per requirements of the question.

However, 74(38.55%) students who scored average marks (3 to 6) were able to give a correct response to one part of the question or mixed correct and incorrect responses for both parts. For example, one student managed to answer correctly in part (b) but failed the whole of part (a). This indicates that she/he had satisfactory knowledge on functional requirements of paints. Extract 7.1 shows a sample of correct responses provided by one of the students.

8. Mahenge secondary school plan to change the colour of staff furniture. During implementation, the quality assurance officer found sprayed paint film is dried to a rough gritty finish.

(a) What could be the three causes of this problem?

(i) The distance of the spraying gun was very near to the surface ! when the spraying gun was very near to the painted surface it may cause the wrong results

(ii) The surface was not smoothed well ! If the surface was not well smoothed the paints when applied it will give the different results on the surface.

(iii) The paints may be was not well mixed ! If the paints are not mixed well it may cause different appearance on the surface.

(b) Recommend four control measures to avoid the problem before painting work is completed.

(i) The surface to be painted should be well smoothed (The surface should be smooth)

(ii) The paints to be painted to the surface should be well mixed

(iii) The spraying gun should be in a certain distance not very near or very far to a surface.

(iv) The surface should be covered on the spaces by the fillers in order to be well attached.

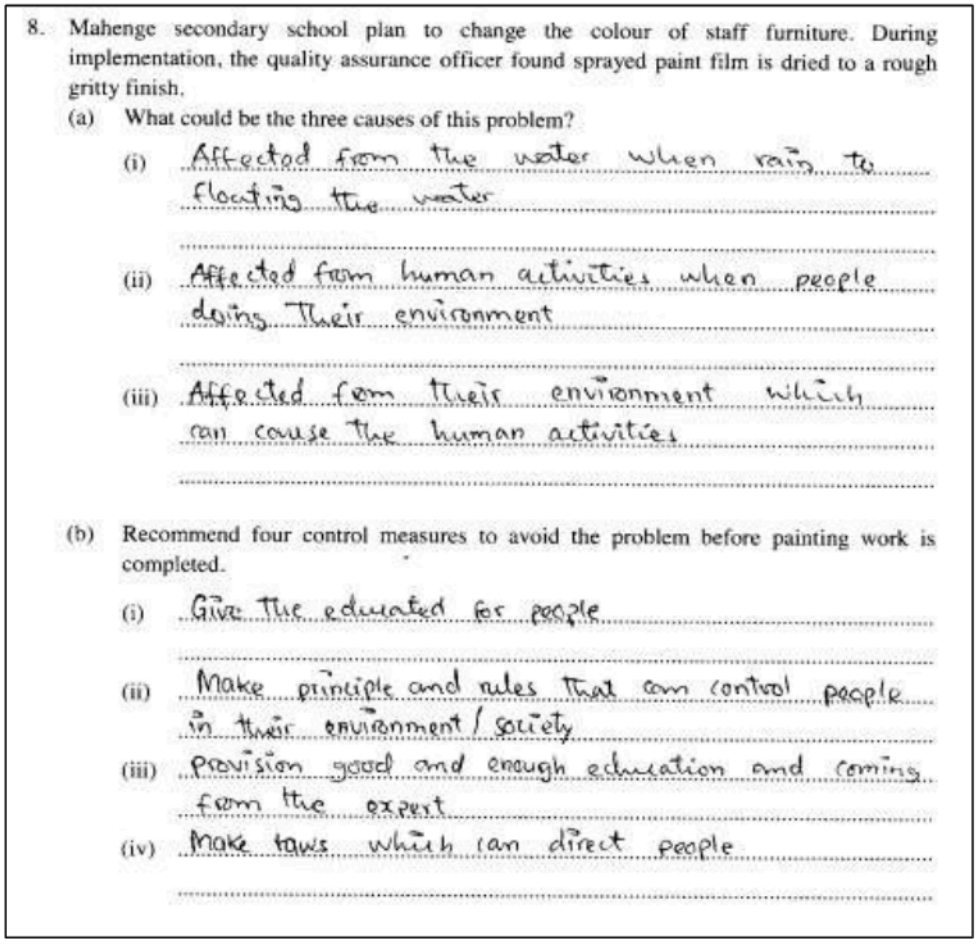
Extract 7.1: A sample of correct responses to Question 8

Extract 7.1 shows a sample of a response from a student who was able to give the causes of a rough gritty finish on dried sprayed paint film in part (a) as well as recommend a control measure to avoid the problem.

Further analysis reveals that 67(34.90%) students scored poor marks in the question. These students lacked knowledge of painting techniques *as* most of them provided irrelevant answers. For example, in part (a), one student identified the causes of the problem as effect of rainwater, effect from human activities. Others listed the parts of the spray gun like air nozzle, tank, regulator, fluid nozzle as the causes of the problems.

Consequently, in part (b), they recommended irrelevant control measures to avoid problems before painting work is completed. For example, one student responded; *make laws, make principles and rules to control people, provide education*. Others wrote control measures as *change the colour, prevent the*

corrosion of the metallic surface, use plastic bucket. Extract 7.2 is an example of incorrect responses taken from one of the students' scripts.



8. Mahenge secondary school plan to change the colour of staff furniture. During implementation, the quality assurance officer found sprayed paint film is dried to a rough gritty finish.

(a) What could be the three causes of this problem?

(i) Affected from the water when rain to floating the water

(ii) Affected from human activities when people doing their environment

(iii) Affected from their environment which can cause the human activities

(b) Recommend four control measures to avoid the problem before painting work is completed.

(i) Give the educated for people

(ii) Make principle and rules that can control people in their environment / society

(iii) Provision good and enough education and coming from the expert

(iv) Make laws which can direct people

Extract 7.2: A sample of incorrect responses to Question 8

Extract 7.2 is a sample of responses from a student who wrote irrelevant answers to the whole parts of the question.

2.2.7 Question 9: Painting Materials

The question consisted of two parts (a) and (b). The students were required to read the given scenario and answer the questions that followed. The question was set to assess the students' ability to identify the painting materials required to paint different surfaces. It also tested the students' ability to calculate the cost of materials required. The question was as follows:

You have won a tender of painting a certain building owned by the

government school having 18 m length, 5 m width, 7 m height with door and windows opening 2 m^2 and 7.5 m^2 respectively.

(a) What type of painting materials would you apply for skirting, internal wall finishes and ceiling board finishes?

(b) Determine cost of materials to be used if 5 litres of painting materials which is sold at 8000/= Tshs per litre can be used to paint 35 m^2 of surface area.

The analysis of students' performance shows that out of 192 (100%) students who attempted this question, 169 (88.92%) scored from 0 to 2.5 marks, with 102 students scoring zero. Moreover, (11.98%) of students scored from 3 to 6 marks, while none managed to score from 6.5 to 10 marks. The distribution of students' performance in this question is summarized in Figure 9.

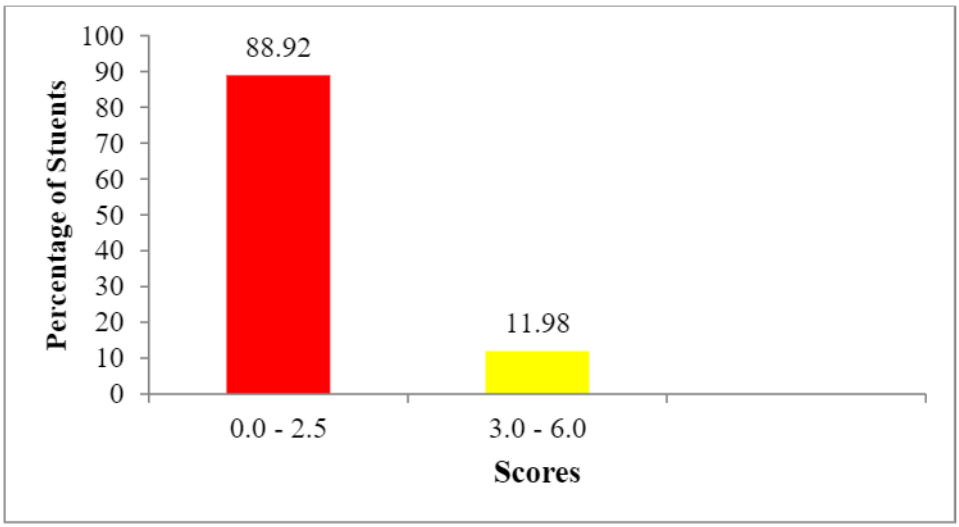
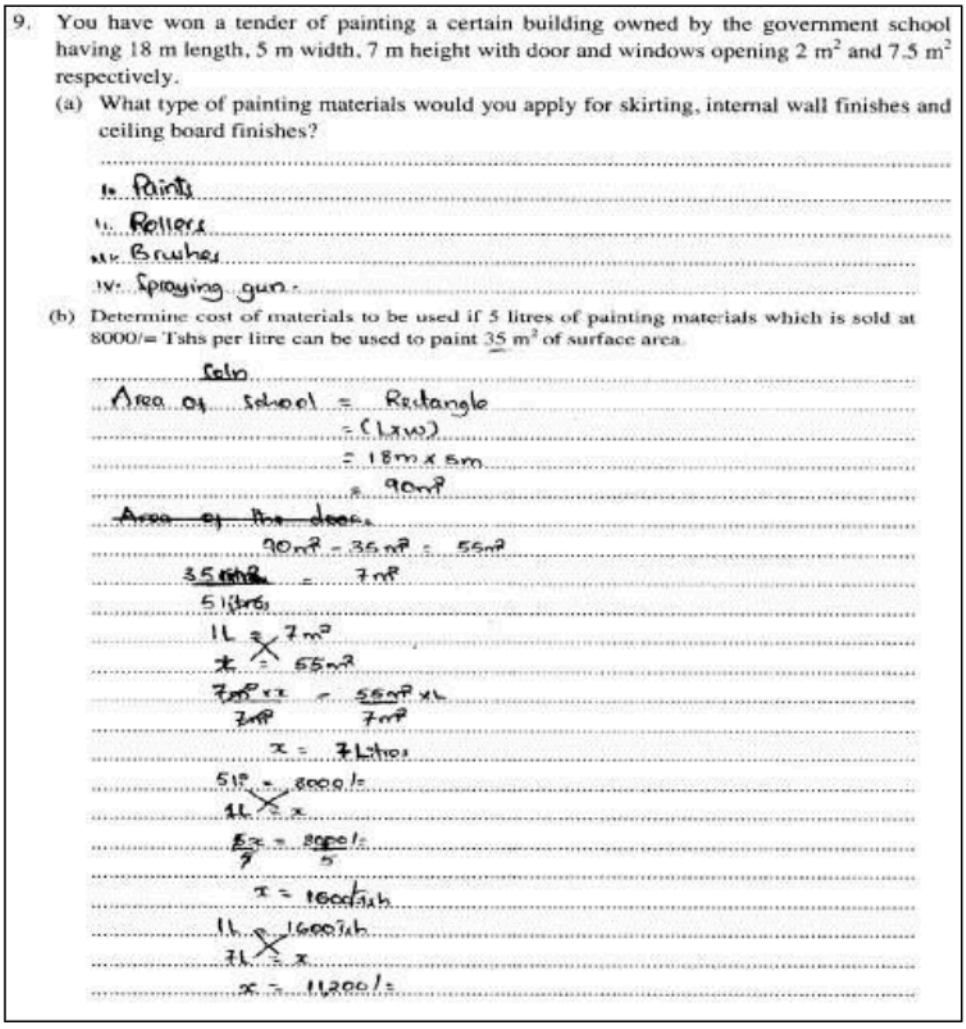


Figure 9: Students' Performance in Question 9

Generally, the students 'performance in this question was weak as 169 (88.02%) students scored below the pass marks. The major failure in this question was due to poor mathematical and practical skills on painting materials. Most of students failed to distinguish between *painting materials* and *painting tools* in part (a), as they provided responses like *painting tray, sand paper, roller sleeves, painting roller, spray gun, brush*. Some students provided irrelevant answers by copying words of other questions from the same question paper and making them as responses for this question. For example, one student copied question number 1(ii) the *equipment used to check if the wallpaper run horizontally after hanging.* Other student responded by copying from question number 2(ii) *converts the liquid coating to a solid dry film, binds the pigment particles together and helps the coating*

to adhere to the surface.

In part (b), majority scored low marks due to lack of mathematical skills as they failed to realize that total surface area should exclude area of openings. Extracts 8.1 is a sample of incorrect responses to this question.


9. You have won a tender of painting a certain building owned by the government school having 18 m length, 5 m width, 7 m height with door and windows opening 2 m^2 and 7.5 m^2 respectively.

(a) What type of painting materials would you apply for skirting, internal wall finishes and ceiling board finishes?

i. Paints
ii. Rollers
iii. Brushes
iv. Spraying gun.

(b) Determine cost of materials to be used if 5 litres of painting materials which is sold at 8000/= Tshs per litre can be used to paint 35 m^2 of surface area.

Soln
Area of School = Rectangle
= (L x W)
= 18m x 5m
= 90m^2
Area of the door
90m^2 - 35m^2 = 55m^2
35m^2 = 7m^2
5 litres
1L = 7m^2
x = 55m^2
$\frac{7m^2 x}{7m^2} = \frac{55m^2 \times L}{7m^2}$
x = 7Litres
5L = 8000/=
1L = x
$\frac{5x}{5} = \frac{8000/=}{5}$
x = 1600/=
1L = 1600/=
7L = x
x = 11,200/=

Extract 8.1: A sample of incorrect responses to Question 9

Extract 8.1 is a sample of student responses who wrote tools for applying paints instead of type of painting materials to be applied for skirting, internal wall finishes and ceiling board finishes in part (a). He/she also failed to calculate the area to be painted and hence obtained wrong cost of materials in part (b).

2.3 Section C: Structured Question

This section consisted of one questions, weighing 15 marks. The score ranges used for grading the performance of candidates in this section are indicated in Table 2.

Table 3: Score Ranges for Grading Candidates' Performance in Question 10.

Scores range	General Performance
0.0 – 4.0	Weak
4.5 – 9.5	Average
10.0 – 15.0	Good

2.3.1 Question 10: Varnishes and Finishes

This question had three parts: (a), (b) and (c). Students were required to; in part (a), give reasons why varnishes are used on the surface of woodwork for the final coat as finishing material. In part (b), explain how they can identify a good varnish and in part (c), identify types of materials under each listed ingredients of varnish. The question intended to assess students' ability to recall facts and basic concepts on varnishes and finishes. The question was as follows:

(a) Why varnishes are used on the surface of woodwork for the final coat as finishing material? Give four reasons.

(b) How can you identify a good varnish? Give four points.

(c) Identify three types of materials under each ingredient of varnish.

(i) Resins (ii) Solvents (iii) Driers

A total of 192 (100%) students attempted this question, where 58 (30.21%) students scored from 0 to 4 marks, 103 (53.64%) students scored from 4.5 to 9.5 marks, while 31 (16.15%) students scored from 10 to 15 marks. Figure 10 shows the trend of students' performance in question 10.

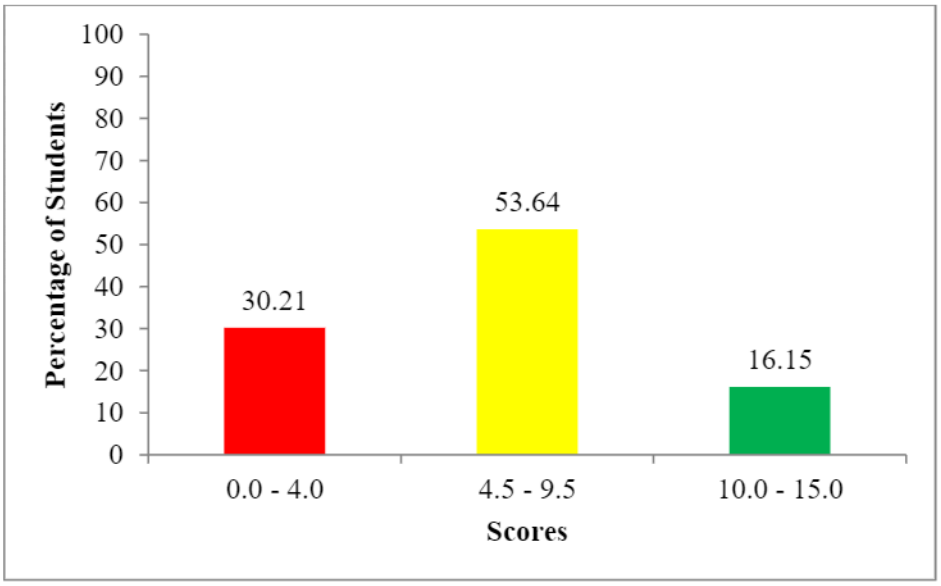
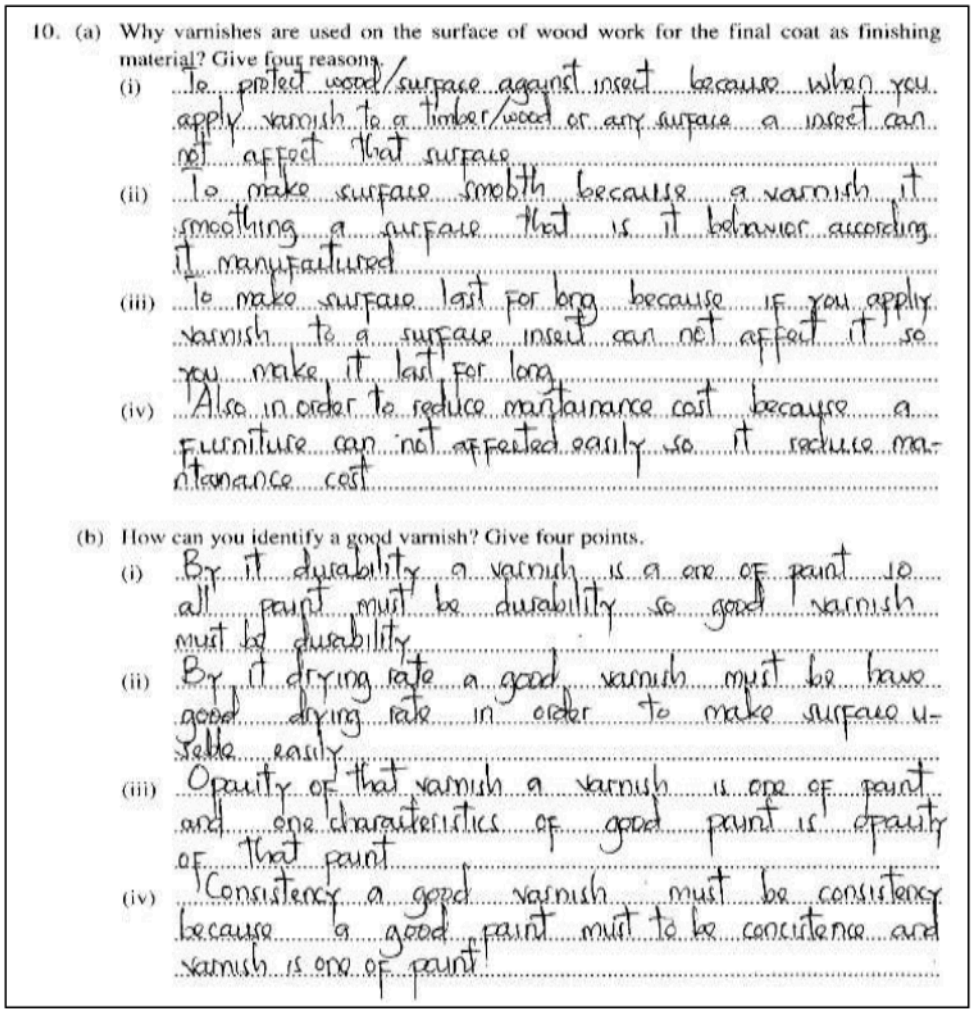


Figure 10: Students' Performance in Question 10

Figure 10 shows that the students' performance in this question was good since 134(69.79%) students scored from 4.5 to 15 marks. In part (a), the majority of students were able to provide satisfactory answers to the questions' requirements such as reasons for varnishing including enhancing *beauty, protecting the surface, increasing durability and make the surface shiny.*

In part (b), students successfully identified characteristics of good varnish, including *durability, quick drying, flexibility, consistency, non-toxicity, transparency, and a reasonable drying rate.* Furthermore, in part (c), students managed to list materials under each ingredient of paint, such as types of resins or resinous substances like *amber, copal, and mastic*; types of solvents such *as boiled linseed oil and methylated spirit of wine*; and types of driers like *manganese, cobalt, and lead acetate*. The Overall responses of students demonstrate a satisfactory understanding of varnishes and its various components. Extracts 9.1 is a sample of correct responses from a student who attempted this question.


10. (a) Why varnishes are used on the surface of wood work for the final coat as finishing material? Give four reasons

(i) To protect wood/surface against insect because when you apply varnish to a timber/wood or any surface a insect can not affect that surface

(ii) To make surface smobth because a varnish it smoothing a surface that is it behavior according it manufaitured

(iii) To make surface last for long because if you apply varnish to a surface insect can not affect it so you make it last for long

(iv) Also in order to reduce maintainance cost because a furniture can not affected easily so it reduce maintenance cost

(b) How can you identify a good varnish? Give four points.

(i) By it durability a varnish is a one of paint to all paint must be durability so good varnish must be durability

(ii) By it drying rate a good varnish must be have good drying rate in order to make surface u-selle easily

(iii) Opauity of that varnish a varnish is one of paint and one characteristics of good paint is opauity of that paint

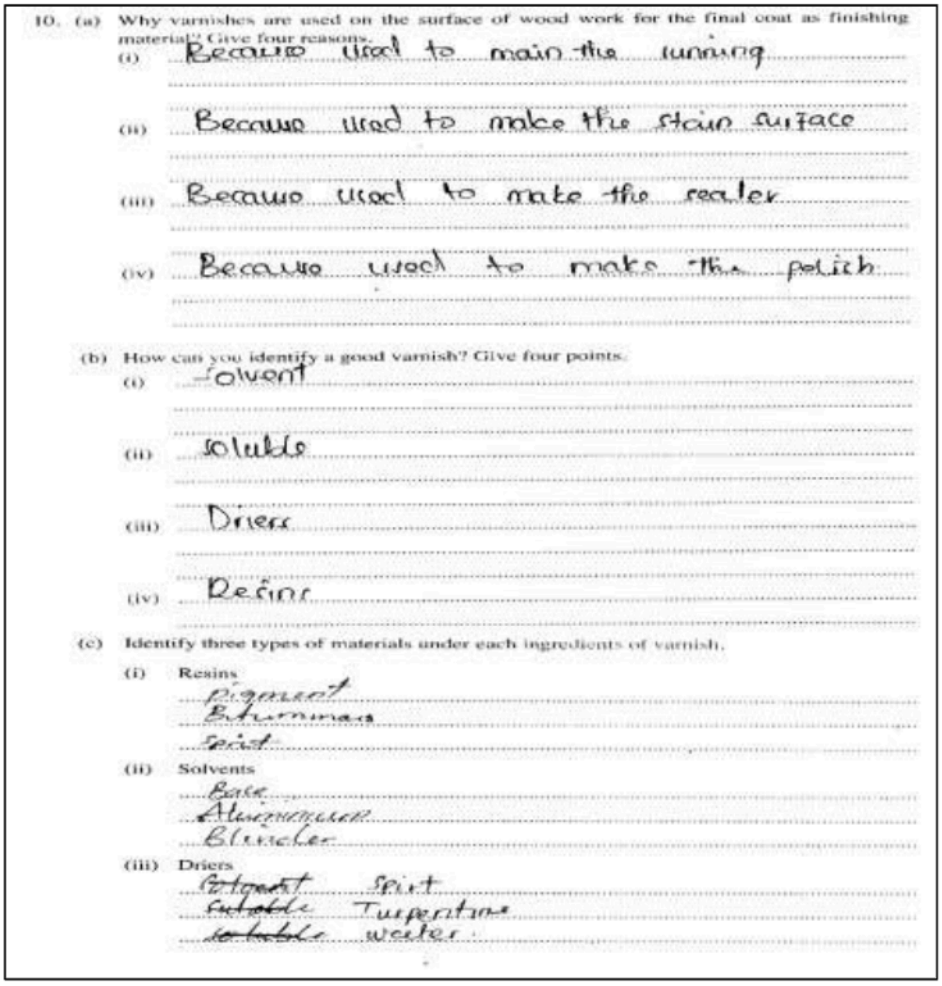
(iv) Consistency a good varnish must be consistency because a good paint must to be concutence and varnish is one of paint

Extract 9.1: A sample of correct responses to Question 10

Extract 9.1, shows a sample of students' work done who provided correct responses in part (a) and (b) of the question.

Further analysis shows that 58(30.21%) students scored poor marks in the question. The majority performed poorly in part (c), indicating that either they did not understand the requirement of the question or lacked knowledge of the composition of the varnish ingredients. Examples of the responses from students include (i) Resins: *these are ingredients of varnish used to increase the thickness of varnish on the wood surface, polymer resins, water solvent, acrylic drier, black amber, shellac, sealer, green amber, give the varnish transparency*. For (ii) *Solvents: give the varnish ability to dry, water, poppy oil, polish, cellulose, aluminum*. For (iii) Driers: *shellac, sealer, stain, water, turpentine, high gross, kerosene, spirit.*

Others responded as; (i) Resins: *pigment, bitumen, spirit* (ii) Solvent: *base, aluminum, binder* (iii) Driers: *spirit, turpentine, water*. Extracts 9.2 is an example of responses from a student who responded poorly.


10. (a) Why varnishes are used on the surface of wood work for the final coat as finishing material? Give four reasons.
(i) Because used to main the running
(ii) Because used to make the stain surface
(iii) Because used to make the sealer
(iv) Because used to make the polish
(b) How can you identify a good varnish? Give four points.
(i) Solvent
(ii) soluble
(iii) Driers
(iv) Resins
(c) Identify three types of materials under each ingredients of varnish.
(i) Resins
Pigment
Bitumen
Spirit
(ii) Solvents
Base
Aluminium
Bleacher
(iii) Driers
Pigment Spirit
Soluble Turpentine
Soluble water

Extract 9.2: A sample of incorrect responses to question 10

Extract 9.2, shows a sample of students' responses who provided incorrect answers to all parts of the question.

3.0 STUDENTS' PERFORMANCE ON EACH TOPIC

The Woodwork and Painting Engineering paper for FTNA 2023 had ten topics that were assessed. These topics are *Introduction to Painting, Workshop Orientation, Safety Rules and Management, Painting Materials, Colour, Water Paints, Tie and Dying, Oil Paints, Painting Techniques,* and *Varnishes and Finishes.*

The analysis of students' performance shows that the students attained good performance on question one (1) Multiple-Choice Items (79.17%). The items were composed from general knowledge of various topics such as; *Introduction to Painting, Workshop Orientation, Safety Rules and Management, Painting Materials, Colour, Water Paints, Tie and Dying, Oil Paints, Painting Techniques, and Varnishes and Finishes*. Good performance was also observed in question seven (7) which covered the topic of *Water paints* (73.96%). Other good performed questions were question ten (10) on the topic of *Varnishes and finishes* (69.79%); question six (6) on the topic of *Painting Materials (66.79%)* and question eight (8) on the topic of *Painting Techniques* (65.10%). The good performance of these topics is a result of the students' adequate knowledge and practical skills of the topic tested and correct interpretation of the questions.

On the other hand, the average performance was observed in question 2 (63.54%) from the topic of *Water Paints*, question 3 (53.12%) on the topic of *Introduction to Painting* and question 4 (33.33%) on the topic of *Workshop Orientation.*

The weak performance was observed in question 5 on the topic of *Safety Rules and Management* (29.69%) and question 9 on the topic of *Painting materials* (11.98%). The weak performance was attributed to insufficient knowledge and skills of the concepts tested, lack of practical skills, and poor proficiency in English language.

The performance of students on different topics and questions is summarized in Appendices I and II respectively.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

The summary of the distribution of students' performance in Table 1 shows that the general performance in the Woodwork and Painting Engineering subject was average since 121 (63.02%) students scored 30 marks and above.

However, some students had weak performance, which was attributed to different factors as explained in the analysis of each question. These include; insufficient knowledge and practical skill of the tested subject matters, lack of mathematical and drawing skills and failure to determine the demand of

the questions due to poor understanding of English Language. Further analysis shows that students with average and good scores were competent in the assessed topics as they provided correct responses as per requirements of the questions.

4.2 Recommendations

In order to improve the performance of students in Woodwork and Painting Engineering subject, the following are recommended:

(a) In teaching and learning process, teachers and students should adhere to teaching and learning strategies emphasized in the syllabus for better students' acquisition of knowledge in the given topics. Additional efforts are required to address low-achieving and underperforming topics.

(b) Teachers should support students in developing practical skills so they may apply theories to real-world situations and ultimately acquire the necessary competences. As a result, they will learn by doing.

(c) Students should be aided in improving the English Language by developing a passion for speaking and writing. This can be achieved by allowing them to participate in debates, group discussions, and the presentation of various assignments.

(d) Students should be guided and encouraged to read various woodwork and painting engineering books so as to widen their knowledge and skills.

(e) Students should develop the culture of reading questions carefully before attempting them so that they understand the requirements of the questions.

(f) Drawing various woodwork and painting engineering designs should be practiced by students. This will improve their ability to draw the diagram neatly and label them correctly.

Appendix I

Analysis of the Students' Performance Per Topic

S/N	Topic	Question Number	Percentage of Students who Scored 30% or More	Remarks
1	Introduction to Painting, Workshop Orientation, Safety rules and management, Painting materials, Colour, Water paint, Tie and Dying, Oil paints, Painting techniques, Varnishes and finishes	1(Multiple Choice Items)	79.17	Good
2	Varnishes and finishes	10	69.79	Good
3	Water paint	2 &7	68.75	Good
4	Painting techniques	8	65.10	Good
5	Introduction to Painting	3	53.12	Average
6	Painting materials	6 & 9	39.34	Average
7	Workshop Orientation	4	33.33	Average
8	Safety Rules and Management	5	26.69	Weak

Appendix II

Analysis of the Students' Performance Per Question

S/N	Topic	Question Number	Percentage of Students Who Scored 30% or More	Remarks
1	Introduction to Painting, Workshop Orientation, Safety rules and management, Painting materials, Colour, Water paint, Tie and Dying, Oil paints, Painting techniques, Varnishes and finishes	1	79.17	Good
2	Water paints	7	73.96	Good
3	Varnishes and finishes	10	69.79	Good
4	Painting materials	6	66.67	Good
5	Painting techniques	8	65.10	Good
6	Water paint	2	63.54	Average
7	Introduction to Painting	3	53.12	Average
8	Workshop Orientation	4	33.33	Average
9	Safety Rules and Management	5	29.69	Weak
10	Painting materials	9	11.98	Weak