

# **BASIC DESIGN AND TECHNOLOGY**

## **PRE-TECHNICAL SKILLS 2**

### 1. **GENERAL COMMENTS**

The questions were within the scope of the syllabus. The standard of the paper was comparable to that of the previous years.

The performance of candidates compared with those of the previous years was very good and highly commendable.

### 2. **SUMMARY OF CANDIDATES' STRENGTHS**

- (1) Majority of the candidates attempted the compulsory question as demanded by the rubrics.
- (2) Most candidates demonstrated very good draughtsmanship skills.
- (3) Candidates presented proportional sketches in pictorial views.
- (4) Some candidates responses indicated that they prepared adequately and had good knowledge of the subject matter.

### 3. **SUMMARY OF CANDIDATES' WEAKNESSES**

- (1) Candidates generally lacked the ability to analyse a given situation thoroughly.
- (2) Majority of the candidates lacked the basic principles of orthographic projections.
- (3) Candidates were not precise in the use of technical terms.
- (4) Majority of the candidates exceeded the allowable tolerance measurement.
- (5) Majority of the candidates lacked the skill of arranging the sequence of operations involved in the making of an artefact.

### 4. **SUGGESTED REMEDIES**

- (1) Candidates should be given adequate exercises in orthographic projections to practice.
- (2) Candidates should be directed to answer all sub-questions as demanded by the rubrics.
- (3) Teachers should guide candidates to be creative and innovative in generating possible solutions.
- (4) Candidates should be taken through practical exercises to improve their skills.
- (5) Candidates should practice with the appropriate drawing instruments and equipment.
- (6) Teachers should guide candidates on how to write specifications from a given brief.

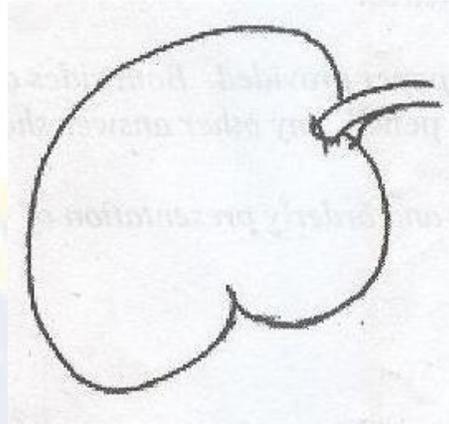
### 5. **DETAILED COMMENTS**

#### **QUESTION 1**

- (a) **Ama ate fried fish, kenkey and fresh pepper sauce.**  
**Copy and complete in the table below, what Ama ate into the functional groups of food.**

Food item	Functional group
<b>i</b>	
<b>ii</b>	
<b>Iii</b>	

**(b) The diagram below is a drawing of a mango**



- (i) Enlarge the drawing in (b) above on the drawing sheet provided.**
  - (ii) Shade your drawing in (b) (i) in three tones.**
  - (iii) List two other methods of shading apart from the one used in (b)(ii).**
- (c)**
- (i) State two reasons why investigations are carried out in the design process.**
  - (ii) List three electrical appliances used in the home.**

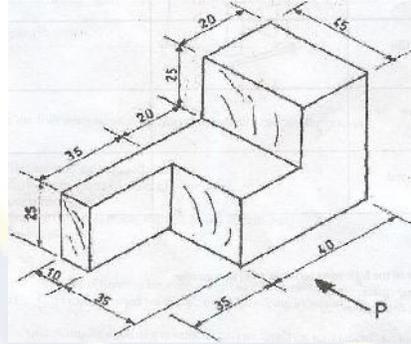
Majority of the candidates could not provide adequate responses for the given food item and their corresponding functional groups. Candidates also could not differentiate between functional group of food and protein, others interchanged the functional group and the food item. Majority of the candidates could enlarge the given mango fruit, but could not shade in three different tones as demanded by the rubrics.

Majority of the candidates listed the three electrical appliances used in the home. Few candidates could not state the reasons why investigations are carried out in the design process. examples are:

To find out more about the problem; To gather information; To identify materials; To examine existing artefact; To determine shape and form, etc. Candidates' performance was good.

## **QUESTION 2**

The figure below shows the pictorial view of a wooden block made from odum.



- (a) (i) Draw full size the front elevation in the direction of arrow P.
- (ii) List two finishes that can be applied on the wooden block.
- (b) State one use each of the following in soft soldering:
  - (i) flux;
  - (ii) soldering bit.
- (c) Make a freehand sketch of a pair of snips.
- (d) The table below shows tools, their uses and ways of caring for them. Copy and complete the table.

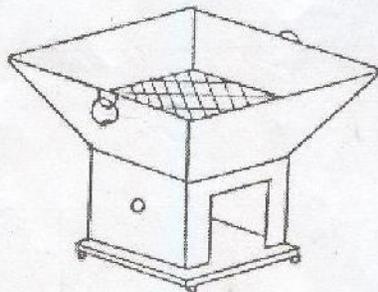
Tool	One use each	One way of caring for the tool
(i) Builders square		
(ii) Hand file		
(iii) Rip saw		
(iv) Gauge rod		

Majority of the candidates drew the front elevation of the wooden block but not to the correct full scale. Candidates sketched the given block in isometric instead. Few candidates responded to the finishes applied on wood, examples; lacquer, oil paint, emulsion paint, vanish, wax polish, etc. Candidates could not state the uses of flux and soldering bit in soft soldering. The appropriate responses include; Flux is used to clean the surfaces of the work pieces to be joined, to protect the cleaned surface. Soldering bit provides heat to melt the solder. Candidates could not sketch in freehand the snips, candidates instead drew a pair of pliers. Majority of the candidates however filled in the table very well by providing one use and one way of caring for the given tool provided in the rubrics. Candidates' performance in this question was generally fair.

## **QUESTION 3**

- (a) Explain each of the following terms as used in concrete:
  - (i) fine aggregates;
  - (ii) coarse aggregates.
- (b) List three methods of pictorial drawing.

- (c) (i) **Make a freehand sketch of a pick-axe.**  
 (ii) **Label any two parts on the tool sketched in (c)(i).**
- (d) **List two items made of cast iron.**
- (e) **Draw the symbol for each of the following electronic components:**
  - (i) **resistor;**
  - (ii) **capacitor;**
  - (iii) **a switch.**
- (f) **The figure below shows a pictorial view of a coal-pot made from a metal plate.**



**Arrange the following steps in a sequential order for making the coal-pot.**

**Steps:**

- (i) **File pieces to the required sizes;**
- (ii) **Mark-out the parts of the coal-pot;**
- (iii) **Assemble the parts;**
- (iv) **Measure the metal pieces to the required dimensions;**
- (v) **Cut-out pieces.**

This was a very popular question attempted by majority of the candidates. Most of the candidates defined and at the same time explained fine and coarse aggregates explicitly, provided the three methods of pictorial drawing as oblique; isometric and perspective drawing. Majority of the candidates could not sketch in freehand the pick-axe. Few candidates listed items made of cast iron and drew the symbols of a resistor, capacitor and a switch correctly. Most candidates could not arrange in sequential order the given steps for making the coal-pot.

The correct sequential order is:

- (i) **Measure the metal pieces to the required dimensions;**
- (ii) **Mark-out the parts of the coal-pot;**
- (iii) **Cut-out pieces;**
- (iv) **File pieces to the required sizes;**
- (v) **Assemble parts.**

Candidates' performance was very good.

#### **QUESTION 4**

- (a) (i) State the difference between plumbing and levelling in walling.  
(ii) List two tools used for plumbing and levelling in walling.
- (b) List two examples each of a conductor and an insulator.
- (c) State one purpose each for the following:  
(i) curing a brick;  
(ii) applying a piece of chalk on the face of a file.
- (d) (i) Make a freehand sketch of the soldering iron used in sheet metalwork.  
(ii) Label any two parts on the tool sketched in (d)(i).
- (e) The table below shows two materials to be glued together. Copy and complete the table

Prepared material	Type of adhesive
(i) Odum to odum	
(ii) Formica to wawa	
(iii) Veneer to odum	

Majority of the candidates found it difficult to state the difference between plumbing and levelling in walling.

Plumbing is a process of checking the vertical alignment or straightness of a wall, while levelling is a process of checking the horizontal alignment or straightness of a wall.

Most candidates listed masonry tools, specifically spirit gauge, plumb and straight line instead of line and pin, spirit level, plumb bob, etc. Candidates gave correct reasons for curing a block but applying a piece of chalk on the surface of a file posed great difficulty. Chalk is applied on the surface of a file to prevent pinning.

Candidates could not produce reasonable sketches for the common soldering iron used at the workshop, rather candidates produced sketches for electrical soldering bit and not a solid soldering iron.

Majority of the candidates were not able to list clearly the different adhesives used on different materials.

This shows lack of an in-depth knowledge on the topic adhesives and abrasives. The performance of the candidates in this question was poor.