BDT – PRE-TECHNICAL SKILLS

1. GENERAL COMMENTS

The standard of the paper compared favourably with that of the previous years and was within the scope of the syllabus. Candidates' performance was good.

2. SUMMARY OF CANDIDATES' STRENGTHS

Candidates were commended for:

(1) writing legibly which rendered the reading of their responses easy to mark.

(2) showing creativity and proper use of space in their drawings.

(3) demonstrating competence in orthographic projection and the development of the hexagonal pyramid.

(4) providing good responses to questions under the core skills section.

3. SUMMARY OF CANDIDATES' WEAKNESSES

Candidates' weaknesses include the following:

(1) poor sketches of workshop tools.

(2) inadequate knowledge in workshop processes.

(3) inability to identify appropriate tools for specific tasks.

(4) poor spelling of technical words.

(5) failure to differentiate between orthographic drawings and pictorial drawings.

4. SUGGESTED REMEDIES

(1) Candidates should be encouraged to read widely and master the spelling of technical words.

(2) Teachers should encourage pupils to acquire the habit of knowing the different categories of tools and their correct uses.

(3) Candidates should visit the school workshop and library regularly for further information on topics treated in the classroom.

(4) More practical lessons should be organized for candidates.

(5) Candidates must be given adequate exercises to get them acquainted to sketches.

5. DETAILED COMMENTS

Question 1

(a) Define a seam in clothing construction.

(b) (i) Give one example each of the following:
(∝) conspicuous seam;
(β) inconspicuous seam.
(ii) List two moist methods of cooking.

(c) (i) List the two types of perspective drawing.
(ii) List three types of pictorial drawing.
(iii) State two stages in the design process.

(d) (i) Explain the spectrum of colour.
(ii) List the secondary colours.
(iii) Explain the term complementary colours.

(a) Majority of the candidates attempted this question and provided good responses.

Candidates provided these correct responses:

A seam is a method of joining two or more pieces of fabrics together using stitches.

OR

A seam is made when two or more pieces of fabric are joined together securely using permanent stitches.

(b) Many of the candidates answered the question fairly well and provided the correct responses. The expected answers are:

(i) Examples of Conspicuous and Inconspicuous seams

Conspicuous Seam	Inconspicuous Seam
• Run and fell seam • Machine fell seam • Overlaid seam • Welt seam	• Open / dressmaker's /plain seam /flat • French Seam • Mock French / Mantua seam

(ii) Moist methods of cooking food includes:Boiling**,** Steaming**,** Poaching**,** Stewing**,** Braising**,** Pressure cooking.

(c) Majority of the candidates answered this question with excellence. The expected response is given below:

(i) Types of perspective drawing:

- Single point perspective / one point perspective / 1-Point perspective
- Two point perspective / double point perspective / 2-Point perspective
- Three point perspective / 3-point perspective

(ii) The types of pictorial drawing are: Isometric drawing, oblique drawing and perspective drawing.

(iii) Stages of the design process includes:

- Situation
- Brief
- Analysis
- Specification
- Investigation / Research
- Testing / Evaluation
- Possible solution / Possible idea
- Development of selected solution/idea
- Final solution
- Working drawing
- Making / Construction / Realization / production

(d) Majority of the candidates provided appropriate responses. Only a few found difficulty explaining complementary colours and spectrum of colour.

(i) Spectrum of colour is explained as the range of different colours produced when light rays passes through a prism or prismatic block.

(ii) The Secondary colours areOrange, Green and Violet / Purple.

(iii) Complementary colouris the colour that lies directly opposite each other on the colour wheel.

Question 2

Figure 1 shows the plan of a hexagonal pyramid.

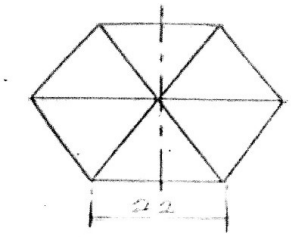


Figure 1

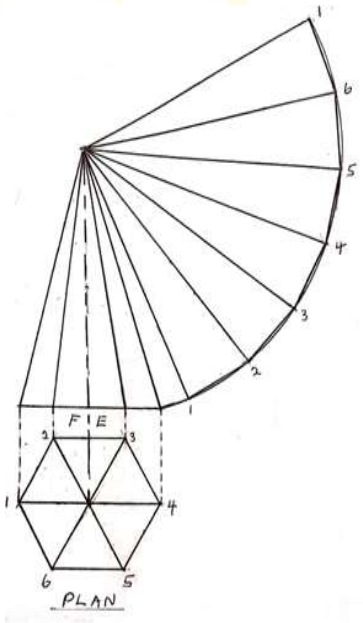
(a) Draw the following:
- **(i) the given plan;**
- **(ii) front view of the pyramid with a vertical height of 75mm**
- **(iii) surface development of the pyramid without the base.**

(b) State the reason why each of the following safety clothing are worn in the workshop:
- **(i) mask;**
- **(ii) helmet.**

(a) Almost all the candidates who attempted this question were able to draw the plan of the hexagonal pyramid.

Drawing the front elevation and the developed surface became a challenge for some of candidates.

Some candidates correctly presented the drawing as shown below whiles others also detached it.



(b) Most of the candidates answered this question well.

(i) **Mask**: Prevents the nose and mouth from inhaling fumes or vapours that are injurious to the craftsman.

(ii) **Helmet: Protects** the head from overhead /falling objects or protects the head from injury.

Question 3

(a) (i) Sketch in two-dimension, a three course block wall in stretcher bond. Length, four full blocks.

(ii) Re-arrange the following steps to be followed in laying the first course of a three course block wall;

I. Lay end blocks;
II. Fill mortar joints;
III. Set out and mark the position of wall;
IV. Spread mortar evenly;
V. Plumb and check alignment of wall;
VI. Gauge end blocks;
VII. Lay remaining blocks.

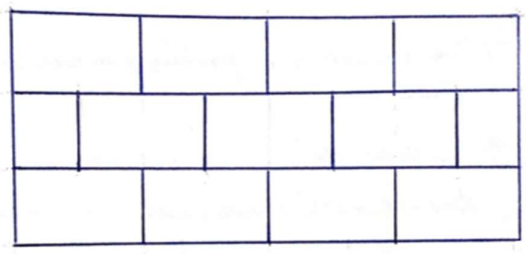
(iii) List three tools which would be used to set out and mark out the position of the wall in (a) (i).

(b) (i) Make a freehand pictorial sketch of a try square.
(ii) Label two main parts of the try square sketched in b(i).
(iii) State one use of the try square.

(a) (i) A popular question.
There were many good answers but some candidates did not understand the question. They produced the bonding in pictorial projection instead of orthographic view (two-dimension).

Some candidates also failed to use the dimensions given.

Nonetheless, a good number of candidates produced very neat and accurate three course block wall in stretcher bond. The expected sketch is shown below:



(ii) Majority of the candidates failed to arrange the steps in sequential order. The correct order is given as:

(III) Set out and mark out position of wall.

(IV) Spread mortar evenly.

(I) Lay end blocks.

(VI) Gauge end blocks.

(VII) Lay remaining blocks.

(V) Plumb and check alignment of wall.

(II) Fill mortar joints.

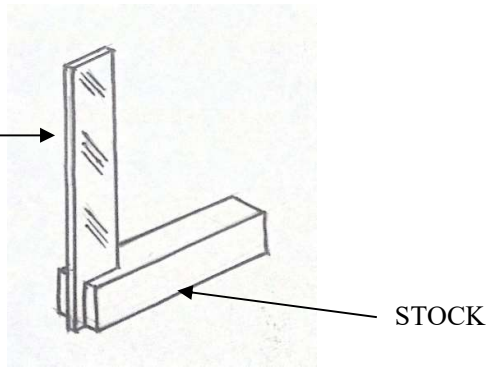
(iii) In general, the answers to this question was poor.

The tools which would be used to set out and mark out the position of the wall are:

Builder's square; Surveyor's tape / tape measure; Chalk; Straight edge; Line and pin.

(b) Majority of the candidates sketched the Builder's Square instead of the Try Square. They also failed to provide satisfactory answers for the uses of the try square. There was evidence of a lot of guess work.

Below is a sketch of a try square:



The try square is used for:

- marking and testing angles at 90°;
- testing flatness and straightness.

Question 4

Figure 2 shows a set up for an operation in woodwork.

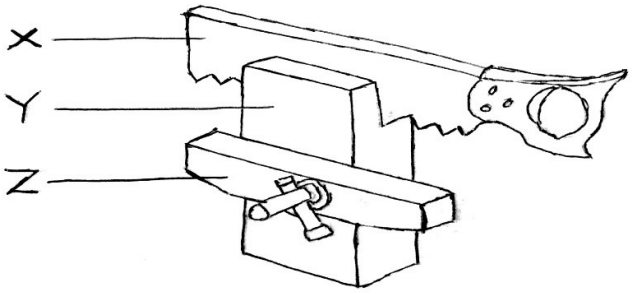


Figure 2

(a) (i) Write the name of the operation being carried out in Figure 2.
(ii) Identify the items labelled X,Y and Z.
(iii) Make a pictorial drawing of the item labelled X.

(b) The table below shows two materials to be joined with an adhesive and be completed with a suitable finish.

Copy and complete the table with the appropriate responses.

MATERIALS TO BE JOINED	*ONE ADHESIVE MATERIAL*	*ONE SUITABLE POLISH*
(i) Odum to Odum		
(ii) Formica to Wawa		
(iii) Veneer to Odum		

(c) Copy and complete the table shown below:

METAL	ONE EXAMPLE	ONE PROPERTY	ONE USE
(i) Ferrous			
(ii) Non - Ferrous			

(a) Majority of the candidates were able to identify the operation being carried out in the sketch.

However, a greater proportion of the candidates failed to correctly identify the labelled items.

The sketches produced were quite good.

(i) The operation is

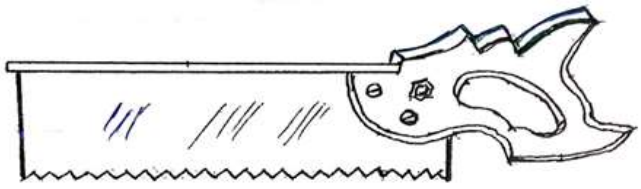
- cutting tenon
- ripping
- sawing
- finishing tenon

(ii) X – Tenon saw

Y - workpiece

Z - woodwork vice

(iii) The expected sketch of the tenon saw is shown below.



(b) Majority of the candidates were able to provide good answers for the adhesive material in each case but only few of the candidates were able to give the suitable finish for the materials to be joined. The expected response is given below:

Materials to be joined	**One Adhesive Material**	**One Suitable Polish**
(i) Odum to odum	White glue PVA	Lacquer Wax
(ii) Formica to wawa	Contact glue Super glue Synthetic resin	Sanding sealer Wax
(iii) Veneer to odum	Contact glue, Super glue, Synthetic resin	Sanding sealer Lacquer Vanish Wax

(c) Majority of the candidates found it difficult completing the table with correct responses. They exhibited lack of knowledge on metals and their properties.

The expected answer is given below:

Metal	One Example	One Property	One Use
Ferrous	Mild steel / low carbon steel	- Malleable - Ductile - Tough, - tensile strength, - corrosive - easily joined	-Nails - Screws - Nuts - Car bodies, -Girders/metal beams
	Medium Carbon steel	- Tough - Strong - Hard - Less ductile - Malleable	-Garden tools - Woodwork cutting tools - Spring - Rails
	High Carbon steel	- Very hard - Less ductile - Less malleable - Tough - Hard	-Hand tools Eg. Hammers, chisels, screw drivers, punches
	Cast iron	- Brittle - Strong - Hard - Self lubricating - Cannot be forged - Easily cast	- Car break drum, - Machine vice - Machine parts - Box iron

Metal	One Example	One Property	One Use
	Copper	- Good conductor of electricity. - Good thermal/heat conductor - Ductile, - Malleable, - Age hardening - Work hardening	- Electrical wire and cables / conductors. - Tubes / pipes - Electrical parts - Door handles - Jewellery - Water tank fins (car)
Non-ferrous	Aluminium	- Good conductor of electricity. - Ductile, - Malleable, - High tensile strength - Light weight	-Window frames - Window blades - Roofing sheets - Cooking utensils - Plates
	Lead	- Very heavy - Soft - Malleable - Ductile - Weak in tension - Corrosion resistance - Low melting point - Casts well	-Roof covering - Installation against radiation - Car battery terminals - Car battery plates - Fishing net weight
	Tin	- Soft - Ductile - Malleable - Resistance to corrosion	-Used to coat cans - Making solder - Ball bearing
	Zinc	- Very weak - Poor strength - Poor weight - Extremely resistance to atmospheric corrosion	-For Galvanizing steel