

054/2&1 BECE
June 2023
BASIC DESIGN AND
TECHNOLOGY
(PRE-TECH. SKILLS) **2&1**
Essay and Objective
1 hour 55 minutes

THE WEST AFRICAN EXAMINATIONS COUNCIL
GHANA

Basic Education Certificate Examination

June 2023

BASIC DESIGN AND TECHNOLOGY

1 hour 55 minutes

(PRE-TECH. SKILLS 2&1)

[100 marks]

Write your name and index number in ink in the spaces provided above.

This booklet consists of two papers. Paper 2 is in two sections: A and B. Answer three questions only: Question 1 in section A and two questions from section B.

Answer Paper 2 which comes first on the A3 drawing sheet provided. Both sides of the A3 drawing sheet may be used. All diagrams or drawings should be in pencil. Any other answer should be written in ink.

All dimensions on the drawing are in millimetres. Credit will be given for clarity of expression and orderly presentation of material.

Paper 2 will last 1 hour 15 minutes after which the drawing sheet(s) will be collected.

Answer Paper 1 on your Objective Test answer sheet.

Do not start Paper 1 until you are told to do so. Paper 1 will last 40 minutes.

SECTION A
CORE SKILLS
[20 marks]*Answer Question 1*
[COMPULSORY]

1. (a) The head of a school is organizing a graduation party for the J.H.S graduates. State **two** factors that would determine the type of meal service. [2 marks]
- (b) (i) State **two** symptoms of scurvy. [2 marks]
(ii) State **two** characteristics of a seam. [2 marks]
- (c) (i) List **two** methods of drawing objects in pictorial view. [2 marks]
(ii) State **two** analysis questions based on ergonomics. [4 marks]
(iii) State **one** instrument used for drawing circles. [1 mark]
- (d) (i) Define *packaging*. [2 marks]
(ii) State **three** benefits of packaging. [3 marks]
(iii) List **two** important information on a good package. [2 marks]

SECTION B
[50 marks]*Answer two questions only from this section.**All questions carry equal marks.*

2. (a) (i) Make a freehand pictorial sketch of a brick.
(ii) Show the standard dimension of the brick on the sketch in (a) (i).
- (b) List **three** materials suitable for making rivets.
- (c) Copy and complete the table below.

TYPE OF TIMBER	ONE PROPERTY	ONE USE
(i) Wawa		
(ii) Odum		
(iii) Mahogany		

- (d) Figure 1 shows the sketch of a planed timber board to be smoothed and polished. Use it to answer Questions (d) (i) and (d) (ii).

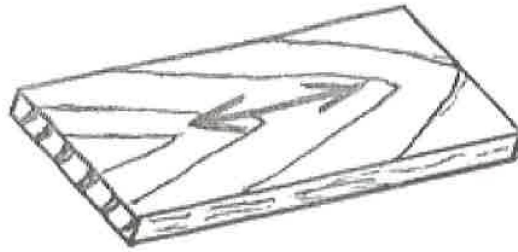


Figure 1

- (i) Name the suitable abrasive material to be used to smoothen the timber surface.
- (ii) State **one** purpose of polishing the smoothened surface of the timber.

[25 marks]

3. (a) (i) Make a freehand pictorial sketch of a rip saw and Label any **two** parts on the sketch.
- (ii) State **one** use of the rip saw.
- (b) Copy and complete the table below.

OPERATION	TWO TOOLS REQUIRED FOR EACH OPERATION
(i) Cutting tenon joint	(i) (ii)
(ii) Soldering sheet metals	(i) (ii)

- (c) Figure 2 shows a sketch of a wooden block. Draw to full size:
- (i) the front view in the direction of arrow Z;
 - (ii) the plan.



Figure 2

[25 marks]
Turn over

4. (a) (i) Make a freehand pictorial sketch of a steel rule.
 (ii) State **one** use of the steel rule.
 (iii) State **two** methods of maintaining the steel rule.
- (b) State **one** use of **each** of the following tools:
 (i) G-clamp;
 (ii) Soldering iron;
 (iii) Mould box.
- (c) Figure 3 shows the front elevation of a wall.

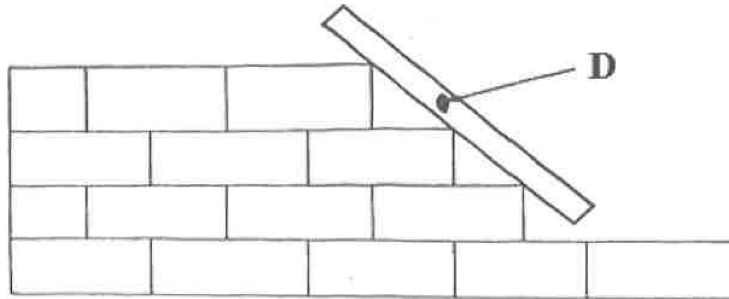


Figure 3

- (i) State the number of courses of the wall.
 (ii) Name the future continuation method shown on the wall.
 (iii) Identify the tool labelled **D** on the sketch.

[25 marks]

END OF ESSAY TEST

DO NOT TURN OVER THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

**YOU WILL BE PENALIZED SEVERELY IF YOU ARE
FOUND LOOKING AT THE NEXT PAGE BEFORE
YOU ARE TOLD TO DO SO.**

PAPER 1
OBJECTIVE TEST

40 minutes

Answer all the questions on your Objective Test answer sheet.

1. Use **2B** pencil throughout.
2. On the pre-printed answer sheet, check that the following details are **correctly** printed:
Your **surname** followed by your **other names**, the *Subject Name*, your *Index Number*, *Centre Number* and the *Paper Code*.
3. In the boxes marked *Candidate Number*, *Centre Number* and *Paper Code*, **reshade** each of the shaded spaces.
4. An example is given below. This is for a female candidate whose name is Clare Naa ALI. Her *index number* is 772384188 and she is writing the examination at *Centre Number* 77234. She is offering *Pre-Tech Skills 1* and the *Paper Code* is 0541.

THE WEST AFRICAN EXAMINATIONS COUNCIL, GHANA BASIC EDUCATION CERTIFICATE EXAMINATION OBJECTIVE ANSWER SHEET

CANDIDATE NAME: ALI CLARE NAA	SUBJECT NAME: PRE-TECH SKILLS 1
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- | | |
|---|---|
| 1. Use 2B pencil, Press firmly. | 4. your first mark completely. |
| 2. Answer each question by choosing one letter and then, shade through the letter chosen like this $\begin{matrix} \text{A} \\ \text{B} \\ \text{C} \\ \text{D} \\ \text{E} \end{matrix}$ | 5. If only four alternative answers are given for each question, ignore the letter E. |
| 3. If you want to change an answer, erase | Your question paper may have fewer than 60 questions. |

CANDIDATE NUMBER	CENTRE NUMBER	PAPER CODE	For Supervisors only. If candidate is absent shade this space.
7 7 2 3 8 4 1 8 8	7 7 2 3 4	0 5 4 1	
0 0 0 0 0 0 0 0 0	0 0 0 0 0	0 0 0 0	
1 1 1 1 1 1 1 1 1	1 1 1 1 1	1 1 1 1	
2 2 2 2 2 2 2 2 2	2 2 2 2 2	2 2 2 2	
3 3 3 3 3 3 3 3 3	3 3 3 3 3	3 3 3 3	
4 4 4 4 4 4 4 4 4	4 4 4 4 4	4 4 4 4	
5 5 5 5 5 5 5 5 5	5 5 5 5 5	5 5 5 5	
6 6 6 6 6 6 6 6 6	6 6 6 6 6	6 6 6 6	
7 7 7 7 7 7 7 7 7	7 7 7 7 7	7 7 7 7	
8 8 8 8 8 8 8 8 8	8 8 8 8 8	8 8 8 8	
9 9 9 9 9 9 9 9 9	9 9 9 9 9	9 9 9 9	

Answer **all** the questions.

Each question is followed by four options lettered A to D. Find the **correct** option for **each** question and shade in **pencil** on your answer sheet the answer space which bears the same letter as the option you have chosen. Give only **one** answer to **each** question. An example is given below.

- Tools are oiled after use to
- A. ensure they remain accurate.
 - B. prevent them from rusting.
 - C. preserve the cutting edges.
 - D. maintain their attractiveness.





The correct answer is prevent them from rusting which is lettered B and therefore answer space B would be shaded. A B C D

Think carefully before you shade the answer spaces; erase completely any answer you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

- | | |
|---|---|
| <p>1. In design analysis, the use of the artefact is considered under</p> <ul style="list-style-type: none"> A. cost. B. ergonomics. C. function. D. safety. | <p>5. Which of the following wires melts when there is excessive current?</p> <ul style="list-style-type: none"> A. Earth wire B. Fuse wire C. Live wire D. Neutral wire |
| <p>2. One method of carrying out investigation when designing an artefact is</p> <ul style="list-style-type: none"> A. developing ideas. B. library research. C. possible solutions. D. workshop operation. | <p>6. In isometric drawing, the inclined lines are drawn to the horizontal at</p> <ul style="list-style-type: none"> A. 15°. B. 30°. C. 45°. D. 60°. |
| <p>3. Straight distances are measured with a</p> <ul style="list-style-type: none"> A. pair of compasses. B. pair of dividers. C. protractor. D. rule. | <p>7. The first sign of spoilage on cooked rice is</p> <ul style="list-style-type: none"> A. moulding and unpleasant smell. B. sliminess and watery nature. C. sign of maggots and colour change. D. change in texture and bubbles on the surface. |
| <p>4. The process of writing information on a working drawing is known as</p> <ul style="list-style-type: none"> A. drawing. B. lettering. C. projections. D. sketches. | <p>8. A common chemical used for preserving fish in Ghana is</p> <ul style="list-style-type: none"> A. saltpetre. B. sodium glutamate. C. salt. D. vinegar. |

9. Ama made ten table runners at a total cost of GH¢ 150.00 and sold one table runner for GH¢ 25.00. What is the total profit?
- GH¢ 350.00
 - GH¢ 250.00
 - GH¢ 200.00
 - GH¢ 100.00
10. A suitable fruit for making marmalade is
- pineapple.
 - orange.
 - pawpaw.
 - guava.
11. Upper case letters are also known as
- small letters.
 - baseline letters.
 - capital letters.
 - line letters.
12. A preliminary design is done to
- increase production.
 - produce ideas.
 - improve creativity.
 - guide production.
13. Shading with lines is known as
- cross hatching.
 - hatching.
 - tonal value.
 - stippling.
14. Which type of lettering is **usually** used for emphasis?
- Freestyle
 - Italics
 - Gothic
 - Roman
15. When a hue is mixed with black, it becomes
- tinted.
 - neutral.
 - shaded.
 - complementary.
16. Electrical current is carried by
- battery.
 - bulb.
 - fuse.
 - wires.
17. The arrangement of blocks to avoid vertical continuous joint is termed
- batching.
 - bonding.
 - racking.
 - toothing.
18. Which of the following lines is used for dimensioning?
- 
 - 
 - 
 - 
19. PVA is a type of
- abrasive.
 - adhesive.
 - aggregate.
 - finish.
20. When a file is clogged with iron filings, the fault is referred to as
- blocking.
 - chipping.
 - loading.
 - pinning.
21. The bolster is used in conjunction with the club hammer to cut
- bricks.
 - metal.
 - plastics.
 - timber.

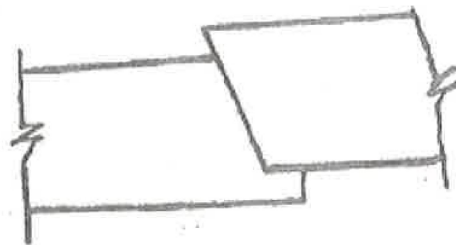


Figure 1

22. The joint shown in Figure 1 is a
- butt joint.
 - grooved-lap joint.
 - grooved joint.
 - lap joint.

Turn over

Use Figure 2 to answer Questions 23 and 24.

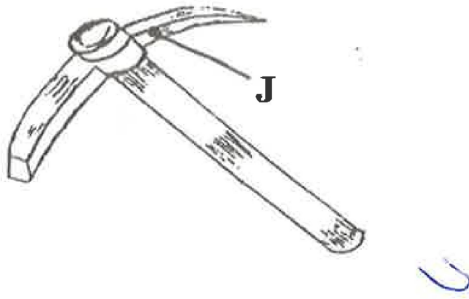


Figure 2

23. The figure shown is a
 A. brick hammer.
 B. mallet.
 C. mattock.
 D. pick axe.
24. The part labelled J is made of
 A. aluminium.
 B. medium carbon steel.
 C. odum.
 D. polyvinyl chloride.
25. Which of the following timbers is used for making formwork?
 A. Mahogany
 B. Odum
 C. Sapele
 D. Wawa
26. The right angled corner of a wall is checked with a
 A. builder's square.
 B. gauge rod.
 C. straight edge.
 D. tee square.

Figure 3 shows the surface development of a solid. Use it to answer Questions 27 and 28.

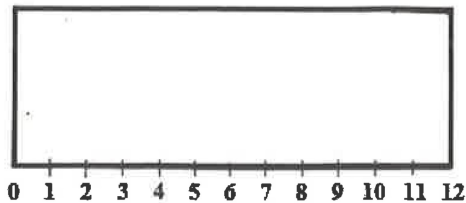


Figure 3

27. The developed surface is a
 A. cone.
 B. cylinder.
 C. square prism.
 D. triangular prism.
28. A product that can be made from the developed surface is
 A. chalk box.
 B. funnel.
 C. match box.
 D. milk tin.



Figure 4

29. The electrical symbol shown in Figure 4 is a
 A. battery.
 B. capacitor.
 C. cell.
 D. resistor.
30. Which of the following factors will make a household furniture weak?
 A. Broken tongue at joint
 B. Firm riveted joint
 C. Glued butt joint
 D. Sufficient glue at the joint

END OF PAPER