ACKNOWLEDGEMENTS

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▪ Ruth A. Arthur and Emmanuelle B. Arthur – for your relentless support

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▪ Teachers, parents and educational institutions – for your continuous patronage and tireless efforts at ensuring quality education for the 21st century child

▪ Junior High School students – you are the ultimate reason for this work.

DEDICATION

To the Lord Jesus Christ, our Saviour and soon-coming King
LIST OF PAPERS

2014  Pre-Technical Skills  Paper 1    Questions
2014  Pre-Technical Skills  Paper 1    Answers
2014  Pre-Technical Skills  Paper 2    Questions
2014  Pre-Technical Skills  Paper 2    Answers
June 2014

BASIC DESIGN AND TECHNOLOGY 1
(Pre-Technical Skills 1)

Objective Test
40 minutes

1. To hold a lining onto a fabric temporarily, one can use
   A. basting
   B. even tacking
   C. tailor’s tacks
   D. thread marking

2. Which of the following stitches can be used to neaten raw edges of a set-in-sleeve?
   A. Feather
   B. Fishbone
   C. Herringbone
   D. Loop

3. The goiter on Evelyn’s neck is caused by lack of
   A. calcium
   B. iodine
   C. protein
   D. vitamin

4. Man-made elements represented in art include
   A. branches
   B. rivers
   C. stones
   D. walls

5. The visitors’ book signed at exhibitions helps the exhibitions helps the exhibitor to know the
   A. dignitaries who attended
   B. number of works in high demand
   C. observations made about the work
   D. people who came

   Use the sketch below to answer questions 6 and 7
6. Which of the following represents the front view in the direction of arrow Z?

[Image of front views]

A.  
B.  
C.  
D.  

7. Which of the following represents the left end elevation in the direction of arrow X?

[Image of elevations]

A.  
B.  
C.  
D.  

8. A place where art works are sold is
   A.  an archive
   B.  a gallery
   C.  a museum
   D.  a studio

9. In design, the conditions that the final solution must satisfy is termed
   A.  investigation
   B.  specification
   C.  development
   D.  analysis

10. Which of the following instruments is most suitable for drawing horizontal lines?
    A.  Tee-square
    B.  Protractor
    C.  Compass
    D.  Set-square
Figure 2 shows a design process. Use it to answer questions 11 and 12.

![Diagram of problem areas connecting to School, Home, Hotel, Church, Stadium, Mosque](image)

**Figure 2**

11. Figure 2 shows the method of
A. specifying solutions
B. stating specification
C. evaluating artifact
D. identifying needs

12. Which of the following design process stages follows the method shown in figure 2?
A. Writing specifications
B. Writing situation
C. Analyzing a situation
D. Sketching possible solutions

13. Shading with lines is described as
A. cross hatching
B. hatching
C. stippling
D. tonal value

14. Which of the following colours produces a feeling of warmth?
A. Blue
B. Green
C. Violet
D. White

15. Which of the following factors can cause a sewing business to collapse?
A. Advertising
B. Insurance
C. Low sales
D. Skilled labour

16. In mixing mortar, the ratio 1:5 represents
A. one part sand to five parts cement
B. one part water to five parts cement
C. one part cement to five parts sand
D. one part cement to five parts gravel

17. Aggregates used for concrete mixture should be
   A. well graded
   B. round in size
   C. square in size
   D. medium graded

18. Which of the following represents a centre line?
   A.  
   B. 
   C. 
   D. 

19. Which of the following is a safety workshop practice?
   A. Wearing strong boots
   B. Wearing loose clothing
   C. Leaving tools on bench
   D. Using mushroom head chisel

20. Polyvinyl acetate is also called
   A. animal glue
   B. white glue
   C. resin glue
   D. contact glue

21. Making a round hole in a piece of metal is termed
   A. boring
   B. chipping
   C. drilling
   D. chamfering

22. Which of the following is not a property of aluminium?
   A. Light in weight
   B. It corrodes
   C. Absorbs heat readily
   D. It is a good conductor of electricity

23. In furniture works, joints which have to be disconnected at certain times can be described as
   A. permanent joints
   B. immovable joints
   C. movable joints
   D. temporary joints
24. The symbol shows
   A. an inductor
   B. a diode
   C. a switch
   D. a capacitor

25. The component is used for
   A. storing electrical energy
   B. opening and closing a circuit
   C. opposing the flow of electric current.
   D. allowing current to flow in one direction

26. In applying finishes, the emulsion paint is mixed with
   A. oil
   B. water
   C. thinner
   D. turpentine

27. The most appropriate tool for enlarging holes in metals is the
   A. flat file
   B. hand file
   C. square file
   D. round file

28. The process represented in the sketch is
   A. marking out
   B. measuring
   C. cutting
   D. drilling
29. The tool marked P is a
   A. marking gauge
   B. builder’s square
   C. try-square
   D. mortise gauge

30. The material being worked on is
   A. polyvinyl chloride
   B. mahogany
   C. sandcrete block
   D. mild steel.

END OF PAPER
June 2014

BASIC DESIGN AND TECHNOLOGY 1
(Pre-Technical Skills 1)

Objective Test

ANSWERS

1. B. even tacking
2. C. Herringbone
3. B. iodine
4. D. walls
5. C. observations made about the work
6. A.
7. C.
8. B. gallery
9. B. specification
10. A. Tee-square
11. D. identifying needs
12. B. Writing situation
13. B. hatching
14. C. Violet
15. C. Low sales
16. C. one part cement to five parts sand
17. A. well graded
18. A.
19. A. Wearing strong boots
20. B. white glue
21. C. drilling
22. B. It corrodes
23. C. movable joints
24. C. a switch
25. B. opening and closing a circuit
26. B. water
27. D. round file
28. A. marking out
29. C. try-square
1. (a) State the main method for cooking the following foods:

(i) rice
(ii) cake

(b) State four suitable methods for preserving fish.

(c) (i) List the type of pencil most suitable for the following operations:

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>PENCIL USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lettering</td>
<td></td>
</tr>
<tr>
<td>Drawing outlines</td>
<td></td>
</tr>
<tr>
<td>Shading</td>
<td></td>
</tr>
</tbody>
</table>

(ii) List four methods of recording data for solving design problems.

(d) (i) State three benefits of packaging.
(ii) List two important information on a good package

(e) Draw a line to illustrate each of the following:

(i) movement
(ii) texture.
2. Figure 1 shows a wooden object to be prepared in the workshop.

(a) Draw full size the front view in the direction of arrow W.

(b) List two tools used for:
   (i) marking-out the shape of the object
   (ii) cutting the waste wood.

(c) State two ways of caring for and maintaining the jack plane.

(d) State the difference between ferrous metals and non-ferrous metals.

(e) Make a freehand sketch of the builder’s square.

3. (a) State one reason why personal safety should be observed in the workshop.

(b) List two specific tools for carrying out each of the following operations:
   (i) setting-out a wall;
   (ii) moulding bricks;
   (iii) cutting a tenon from a piece of wood;
   (iv) soldering sheet metals.
(c) (i) Make a freehand pictorial sketch of a rasp file
(ii) Label any two parts of the tool sketched in (c)(i) above.
(iii) State one use of the rasp file.

(d) (i) State the main difference between a brick and a block.
(ii) List the two main materials for making sandcrete blocks.

4. (a) List one protective clothing each for the following:
(i) foot;
(ii) head;
(iii) eyes,

(b) (i) Make a freehand pictorial sketch of the firmer chisel.
(ii) Label any two parts of the tool sketched in 4 (b) (i)

(c) State one reason each for carrying out the following operations:
(i) cross-filing
(ii) curing a sandcrete block;
(iii) setting out a wall.

(d) Copy and complete the table below

<table>
<thead>
<tr>
<th>ALLOY</th>
<th>COMPOSITION</th>
<th>ONE USE EACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soft solder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bronze</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. (a) State the main method for cooking the following foods:

(i) rice - boiling
(ii) cake - baking

(b) State four suitable methods for preserving fish.

- Drying
- Smoking
- Freezing
- Salting
- Frying
- Canning

(c) (i) List the type of pencil most suitable for the following operations:

<table>
<thead>
<tr>
<th>OPERATION</th>
<th>PENCIL USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lettering</td>
<td>HB</td>
</tr>
<tr>
<td>Drawing outlines</td>
<td>H, 2H</td>
</tr>
<tr>
<td>Shading</td>
<td>2B or BB, 3B, 4B, 5B, 6B</td>
</tr>
</tbody>
</table>

(ii) List four methods of recording data for solving design problems.

- Taking notes / Using computer
- Taking photographs
- Video recording
- Audio recording
- Drawing / sketching
- Drawing graphs
- Making charts

(d) (i) State three benefits of packaging.

- It adds value to the product
It protects the product from contamination
It protects the consumer from hazards
Attracts consumers
Makes handling easier / makes it portable
Promotes easy identification.

(ii) List two important information on a good package
- Information about content / manufacturer
- Date of production
- Expiry date
- Instructions for usage

(e) Draw a line to illustrate each of the following:
(i) movement

Any line apart from horizontal or vertical lines, eg

(ii) texture.

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

2. Figure 1 shows a wooden object to be prepared in the workshop.

(a) Draw full size the front view in the direction of arrow W.
Accurately drawing 6 horizontal lines and 6 vertical lines neatly

(b) List two tools used for:

(i) marking-out the shape of the object
   - Marking knife
   - Pencil
   - Try-square
   - Marking gauge
   - Rule / Tape measure
   - Straight edge

(ii) cutting the waste wood.
   - Mortise chisel or firmer chisel
   - Mallet
   - Tenon saw / other back saws (except rip saw)

(c) State two ways of caring for and maintaining the jack plane.
   - Cleaning the tool after use
   - Oiling the metal parts
   - Keeping the tool in the rack or tool box
   - Sharpening the tool before use

(d) State the difference between ferrous metals and non-ferrous metals.
   - Ferrous metals are metals that contain iron while non-ferrous metals do not contain iron.
   - Ferrous metals can rust while non-ferrous metals do not rust.

(e) Make a freehand sketch of the builder’s square.
3. (a) State one reason why personal safety should be observed in the workshop.

- To avoid injury
- To prevent accident

(b) List two specific tools for carrying out each of the following operations:

(i) setting-out a wall;

- Line and pins
- Straight edge
- Builder’s square
- Profile Boards
- Spirit Level
- Tape measure / surveyor’s tape
- Pegs
- Piece of chalk

(ii) moulding bricks;

- Mould box
- Head pan / gauge box / wheel barrow
- Shovel / spade
- Tamping rod
- Pick Axe

(iii) cutting a tenon from a piece of wood;

- Try square
- Marking gauge / mortise gauge
- Pencil / Marking knife
- Tenon Saw
- Mallet
- Bevel-edged chisel / firmer chisel

(iv) soldering sheet metals.

- Soldering iron / bit
- Coal pot / stove / blow lamp
- File / emery cloth
- Shears / pair of snips
Mallet
Folding bar

(c)  (i) Make a freehand pictorial sketch of a rasp file

(ii) Label any two parts of the tool sketched in (c)(i) above.

- Blade / teeth / cut
- Tang
- Ferrule
- Handle
- Shoulder

(iii) State **one** use of the rasp file.

- For smoothening edges and shapes
- For shaping a circular piece of wood

(d)  (i) State the **main** difference between a brick and a block.

- The size
- The weight
- The material

(ii) List the two **main** materials for making sandcrete blocks.

- Sand
- Cement

4.  (a) List **one** protective clothing **each** for the following:

(i) foot; safety boots / safety shoes / Protective shoes

(ii) head; Helmet

(iii) eyes, Goggles / eye shield / spectacles

(b)  (i) Make a freehand pictorial sketch of the firmer chisel.
(ii) Label any two parts of the tool sketched in 4 (b) (i)

- Cutting edge
- Edge
- Ferrule
- Handle

(c) State one reason each for carrying out the following operations:

(i) cross-filing
- For removing waste metal
- For removing unwanted metal
- For removing excess metal

(ii) curing a sandcrete block;
- For making it strong
- For making it durable
- For making it hard
- To avoid shrinkage

(iii) setting out a wall.
- For straightness
- For squaring
- For accuracy

(d) Copy and complete the table below

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<td>For joining sheet metal</td>
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<td></td>
<td></td>
<td>For soldering sheet metal, wires cables and pipe</td>
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<tr>
<td>Brass</td>
<td>Copper + zinc</td>
<td>Door locks</td>
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