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BECE

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

Past Questions & Answers

2014

**Junior High School
Years 1, 2 & 3**

Compiled by:



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

DEDICATION

To the Lord **Jesus Christ**, our Saviour and soon-coming King

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

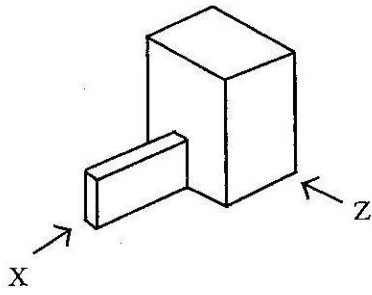
2. Which of the following stitches can be used to neaten raw edges of a set-in-sleeve?
 - A. Feather
 - B. Fishbone
 - C. Herringbone
 - D. Loop

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

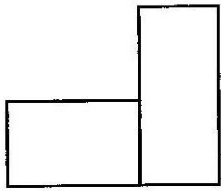
4. Man-made elements represented in art include
 - A. branches
 - B. rivers
 - C. stones
 - D. walls

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

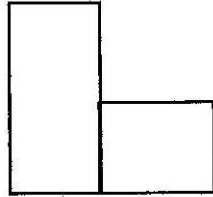
Use the sketch below to answer questions 6 and 7



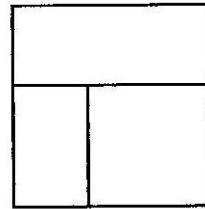
6. Which of the following represents the front view in the direction of arrow **Z**?



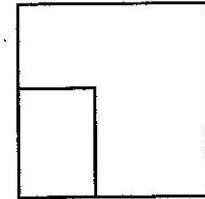
A.



B.

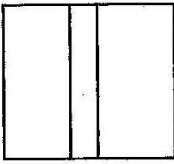


C.

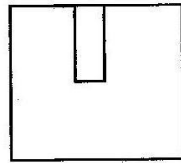


D.

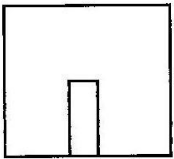
7. Which of the following represents the left end elevation in the direction of arrow **X**?



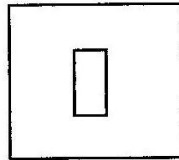
A.



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

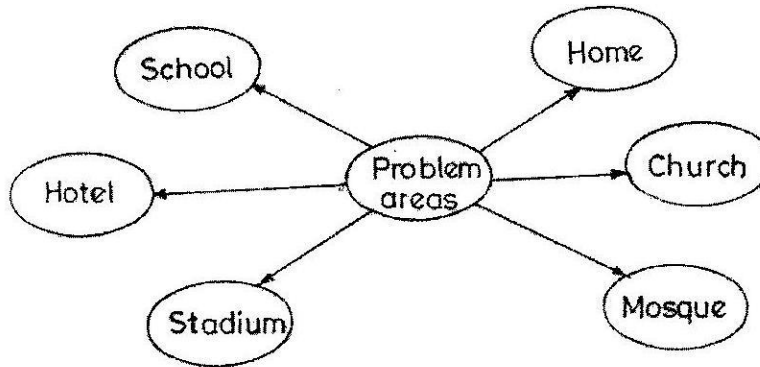


Figure 2

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

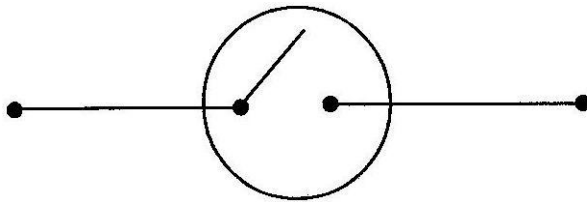
- A. boring
- B. chipping
- C. drilling
- D. chamfering

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

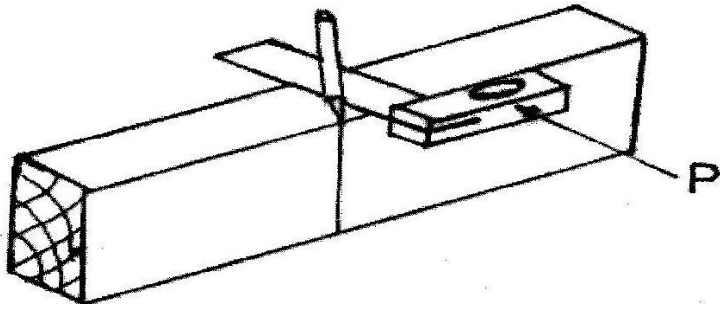
23. In furniture works, joints which have to be disconnected at certain times can be described as
- A. permanent joints
 - B. immovable joints
 - C. movable joints
 - D. temporary joints

Use the symbol below to answer questions 24 and 25



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

Use the sketch below to answer questions 28 to 30



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
30. B. mahogany

June 2014

**BASIC DESIGN AND TECHNOLOGY 2
(Pre-Technical Skills 2)**

**Essay
1 hour 15 minutes**

**SECTION A
(CORE SKILLS)**

[20 marks]

Answer question 1 [COMPULSORY]

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:

OPERATION	PENCIL USED
Lettering	
Drawing outlines	
Shading	

- (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.

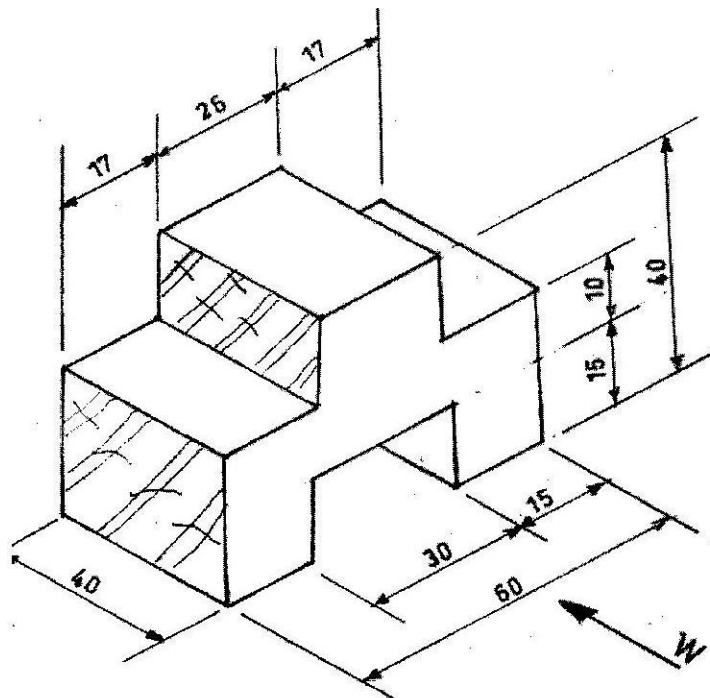
SECTION B

[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**.
- (b) List **two** tools used for:
- marking-out the shape of the object
 - 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

ALLOY	COMPOSITION	ONE USE EACH
Soft solder		
Brass		
Bronze		

June 2014

BASIC DESIGN AND TECHNOLOGY 2 (Pre-Technical Skills 2)

Objective Test

ANSWERS

SECTION A (CORE SKILLS)

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:

OPERATION	PENCIL USED
Lettering	HB
Drawing outlines	H, 2H
Shading	2B or BB , 3B, 4B, 5B, 6B

(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.

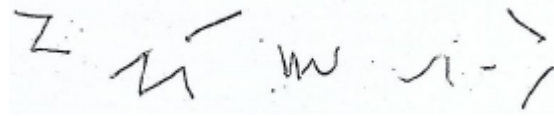
(ii) List **two** important information on a good package

- Information about content / manufacturer
- Date of production
- Expiry date
- Instructions for usage

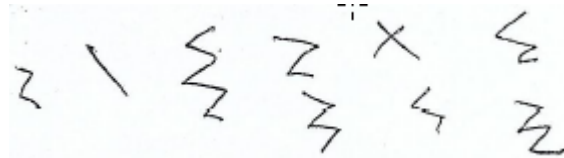
(e) Draw a line to illustrate **each** of the following:

(i) movement

Any line apart from horizontal or vertical lines, eg



(ii) texture.



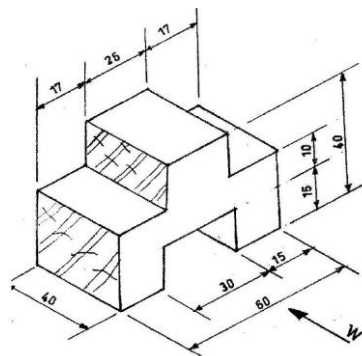
SECTION B

[50 marks]

Answer **two** questions **only** from this section

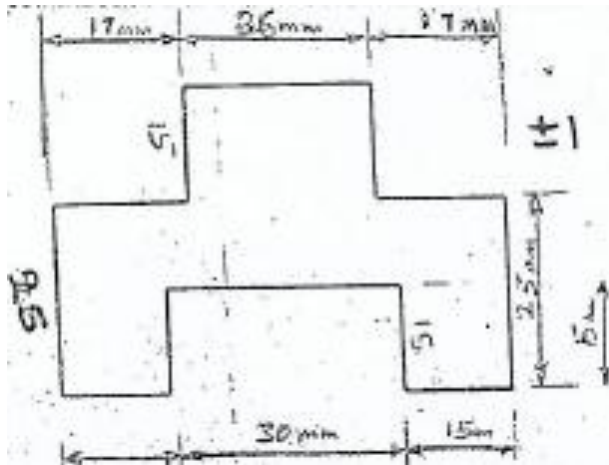
All questions carry equal marks

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*.

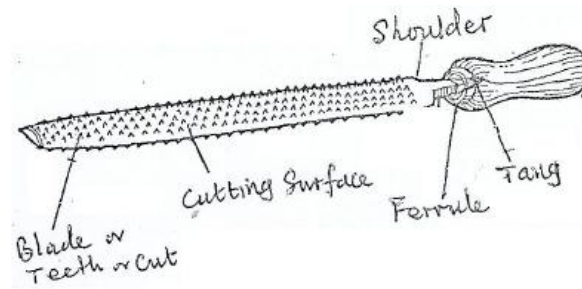
- Ferrous metals are metals that contain iron while non-ferrous metals do not contain iron.
- Ferrous metals can rust while non-ferrous metals do not rust.

(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: A block is bigger than a brick
- The weight: A block is heavier than a brick
- The material: A block is made of concrete whilst brick is made of clay

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

- Sand
- Cement

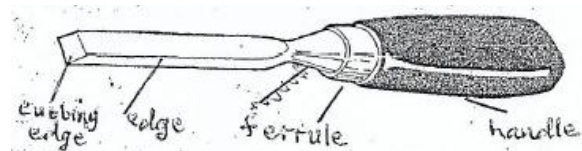
4. (a) List **one** protective clothing **each** for the following:

(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;

- To help the block to attain its maximum strength
- To prevent rapid drying
- To reduce shrinkage
- To make it dense
- To prevent / reduce cracks
- To make it durable

(iii) setting out a wall.

- For straightness
- For squaring
- For accuracy

(d) Copy and complete the table below

ALLOY	COMPOSITION	ONE USE EACH
Soft solder	Lead + tin or antimony	<ul style="list-style-type: none">▪ For joining sheet metal▪ For soldering sheet metal, wires cables and pipe
Brass	Copper + zinc	<ul style="list-style-type: none">▪ Door locks▪ Door handles▪ Musical instruments▪ Hinges▪ Ornaments▪ Taps▪ Bolts and nuts▪ Bells
Bronze	Copper + tin	<ul style="list-style-type: none">▪ Statues▪ Trophies▪ Shields▪ Church bells