



CENTRE NUMBER	CANDIDATE NUMBER

MINISTRY OF EDUCATION AND HUMAN RESOURCES DEVELOPMENT

SOLOMON ISLANDS SCHOOL CERTIFICATE

2018

INDUSTRIAL ARTS/DESIGN TECHNOLOGY

QUESTION AND ANSWER BOOKLET

THURSDAY 15TH NOVEMBER 9:00 AM

**TIME: 3 Hours Plus 10 Minutes
Reading Time.**

<u>SECTION</u>	<u>CONTENT</u>	<u>MARKS</u>
A	Multiple Choice Questions	20
B	Short Answer Questions	20
C	Long Answer Questions	30
D	Designing/Evaluation Questions	30
		<u>100</u>

INSTRUCTION TO CANDIDATE

1. Do NOT open this Booklet until you are told to do so.
2. Make sure both your Centre Number and Candidate Number are written in the box provided at the top right hand corner and also on the back flap at the back of this booklet.
3. This paper consists of FOUR (4) sections. **All sections are compulsory.**
4. Write your answers to **Section A** on the Answer Sheet on the **FOLD-OUT FLAP** on the last page. And your answers to **Sections B, C and D** in the spaces provided in this booklet.
5. This paper is worth 30% of the examination marks.
6. Do NOT use correction fluid.
7. Mobile phones are NOT allowed in the Examination room.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

THIS BOOKLET CONTAIN 21 NUMBERED PAGES.

SECTION A:

MULTIPLE CHOICE QUESTIONS

(20 MARKS)

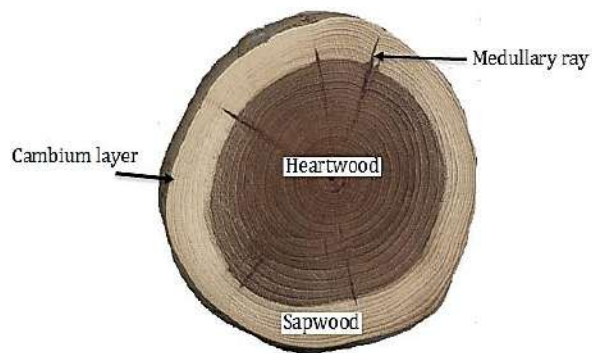
WRITE YOUR ANSWERS ON THE BACK FLAP AT THE END OF THIS BOOKLET.

1. General workshop safety entirely depends on how we use our common senses. Keeping timber cut-offs under the benches and removing nails from used timbers ensure that there is/are;

- A. neatly stored.
- B. materials for re-used.
- C. safe actions in the workshop.
- D. safe condition in the workshop.

2. Drawn below is a cross-sectional part of a sawn log. Which part of the log as shown would be suitable to get timber for general building construction?

- A. Sapwood.
- B. Heartwood.
- C. Medullary ray.
- D. Cambium layer.

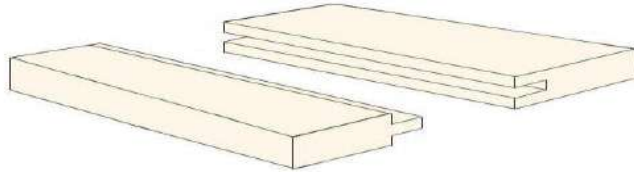


3. There are different types of common bench plane and they have specific task to perform more especially in timber dressing. A jointer plane shown below would more suitable to;



- A. plane curves on timber.
- B. plane rough sawn timber.
- C. smooth the timber face side.
- D. plane flat surface along timber edge.

4. What is the name of the **widening joint** shown below?



- A. Rebate.
 - B. Halving joint.
 - C. Common dovetail.
 - D. Tongue and groove.
5. **Self-life** of glues refer to the duration (period);
- A. the glue is touching dry before the parts are assembled.
 - B. allowed while assembling the glued parts to be cramped.
 - C. from manufacturing to when the glue gets dry and unused.
 - D. in which the glue gets its maximum strength after application.
6. When applying varnish to a piece of furniture top, the surface must be sanded correctly. Which is the correct order of applying abrasives?
- A. 600, 300, 150.
 - B. 60, 150, 300.
 - C. 400, 150, 60.
 - D. 60, 20, 300.

7. What TWO (2) elements is cement composed of?

- A. Sand and gravel.
- B. Limestone and clay.
- C. Clay and glass stone.
- D. Water and limestone.

8. Below is a Jenny calipers or sometimes called odd leg calipers. What is its specific purpose?

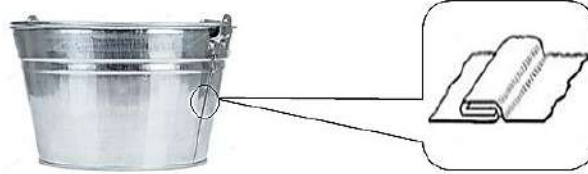


- A. For holding try square on sheet metal.
- B. To produce parallel line on sheet metal.
- C. For scribing lines on sheet metal for cutting.
- D. For producing witness marks on sheet metal.

9. Which metal below is used as thin layer on galvanised sheet metal?

- A. Tin.
- B. Zinc.
- C. Bronze.
- D. Cast iron.

10. Name the sheet metal joint used on the side of the sheet metal bucket below.



- A. Lap joint.
- B. Double seam.
- C. Standing seam.
- D. Grooved seam.

11. **Edging** is done on sheet metal to _____ for safety.

- A. bend sharp edges
- B. create sharp edges
- C. remove sharp edges
- D. secure sheet metal in place

12. The **blade of hacksaws** varies from 18T, 24T and 32T and they are purposely used for various cutting on metal shapes. The hacksaw blades 18T, 24T and 32T represents the;

- A. number of blades per 25mm.
- B. number of hacksaw teeth per 2cm.
- C. number of hacksaw teeth per 25mm.
- D. available sizes of hacksaw blade per 2cm.

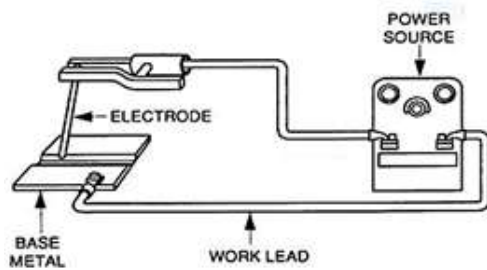
13. Which tool below is **suitable** to remove the small iron chips that caused pining after continuous filing?

- A. Scriber.
- B. File card.
- C. File tang.
- D. Wire chipper.

14. Which of the following is NOT a heat treatment process in metal?

- A. Topping.
- B. Annealing.
- C. Hardening.
- D. Tempering.

15. The illustration below is a/an;



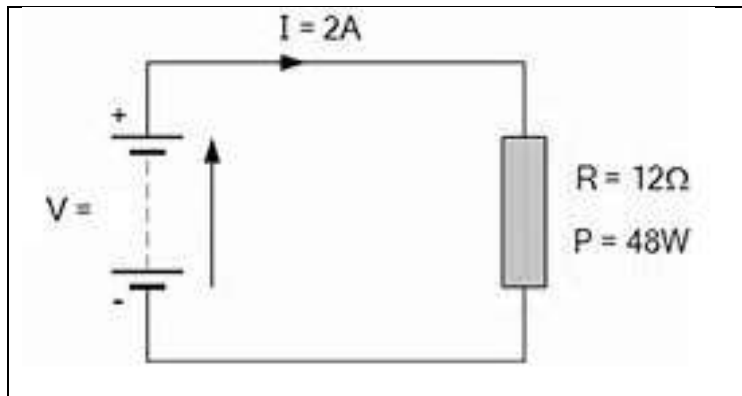
- A. Arc welding.
- B. Mig welding.
- C. Resistance welding.
- D. Oxy-acetylene welding

16. What does the **electronic** symbol below represents?



- A. Diode.
- B. Resistor.
- C. Capacitor.
- D. Transistor.

17. Study the circuit drawn below and calculate the voltage in the circuit using Ohm's Law.



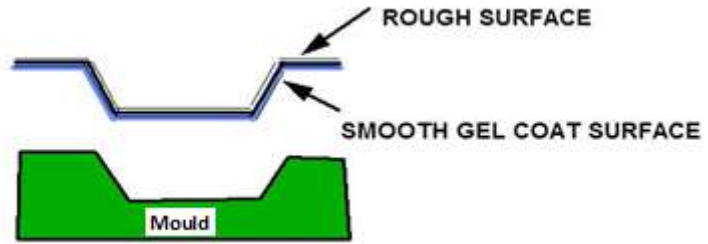
- A. 6 Ohms.
B. 24 Ohms.
C. 24 volts.
D. 96 volts.
18. In electrical work, what is the use of the tool shown below?



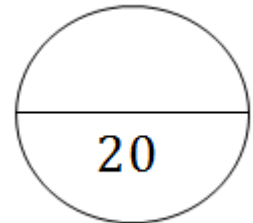
- A. Cutting long wires.
B. Holding wires together.
C. Sharpening wire edge.
D. Cut off wire insulation.
19. Which of the plastic products below belongs to thermosetting?
- A. PVC tube.
B. Inflatable toy.
C. Fibre glass eski.
D. Mineral water vessel.

20. A mould is an important component of GRP work. Which type of mould is used to produce the bottom part of the boat (as indicated by the arrow)?

- A. Top mould.
- B. Male mould.
- C. Bottom mould.
- D. Female mould.



Total marks for Section A:



SECTION B: SHORT ANSWER QUESTIONS

(20 MARKS)

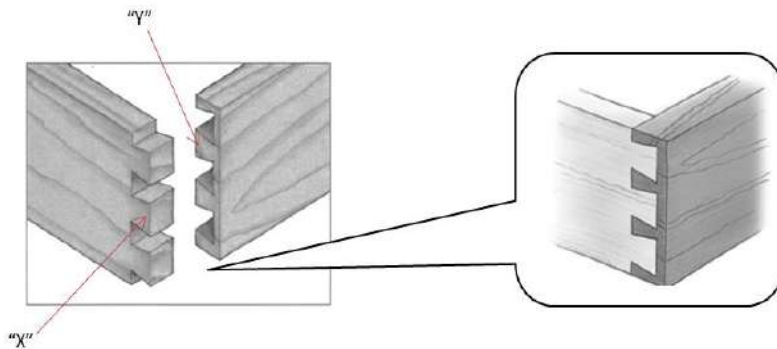
Write all answers in the spaces provided.

21. Write an advantage and a disadvantage of the following seasoning methods.

Methods of seasoning	Advantage	Disadvantage
Natural Seasoning		
Kiln Seasoning		

(4 marks)

22. Study the joint shown below and answer questions (a, b and c):



a. What is the name of the **joint** given above?

Name: _____ (1 mark)

b. Name the parts indicated as **Y** and **X**.



Part **Y**: _____

Part **X**: _____ (2 marks)

c. Give ONE (1) reason why the above joint is suitably used for drawers.

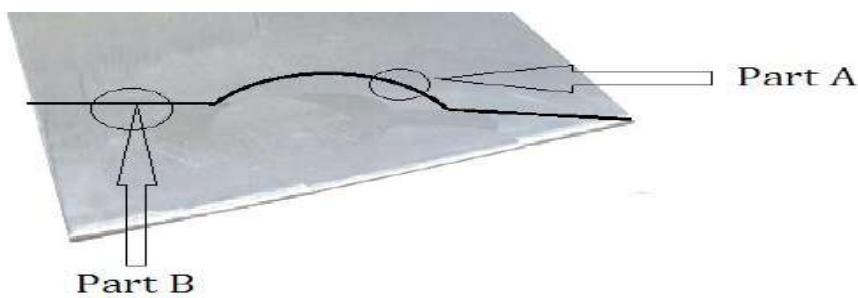
(1 mark)

23. Stakes are used to shape sheet metal to various forms. Name ONE (1) function for each of the stake illustrated below:

	Stakes	Function
i.	 <p>Funnel stake</p>	
ii.	 <p>Square bottom stake</p>	

(2 marks)

24. Study the different scribed lines on the sheet metal below and specify which particular tin snip would be suitable to cut the indicated lines.



Part A: _____

Part B: _____

(2 marks)

25. i. Explain what an **Alloy metal** is.

(2 marks)

ii. Explain any ONE (1) reason for alloying metal.

(2 marks)

26. What is thermoplastic?

(1 mark)

27. State ONE (1) function for the following electronic components;

Transistor

(1 mark)

Capacitor

(1 mark)

Battery

(1 mark)

Total marks for Section B:

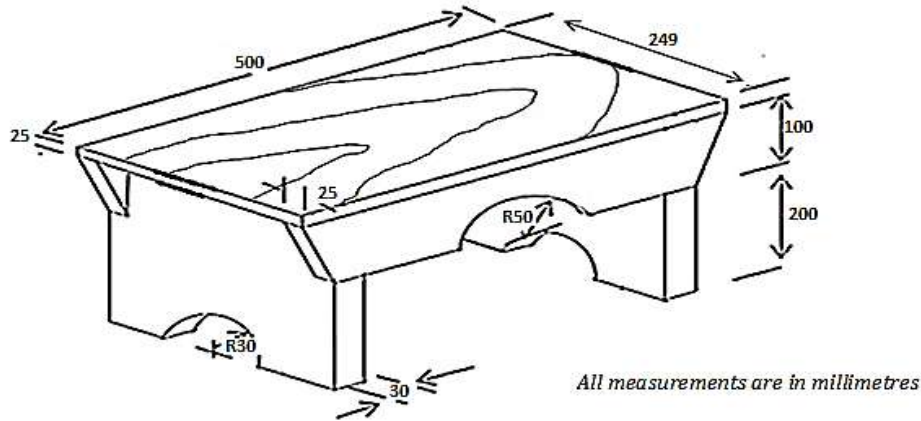
20

SECTION C: LONG ANSWER QUESTIONS

(30 MARKS)

Attempt all questions and write your answers in the spaces provided.

28. Fill-in the cutting list for the clinic dressing stool shown in the table below:



i. Cutting List

Item No.	Quantity/Specification	Size/length

(6 marks)

ii. If the stool is going to use on the veranda then choose TWO (2) suitable **adhesives** to use on the joints.

Name: a. _____

b. _____

(2 marks)

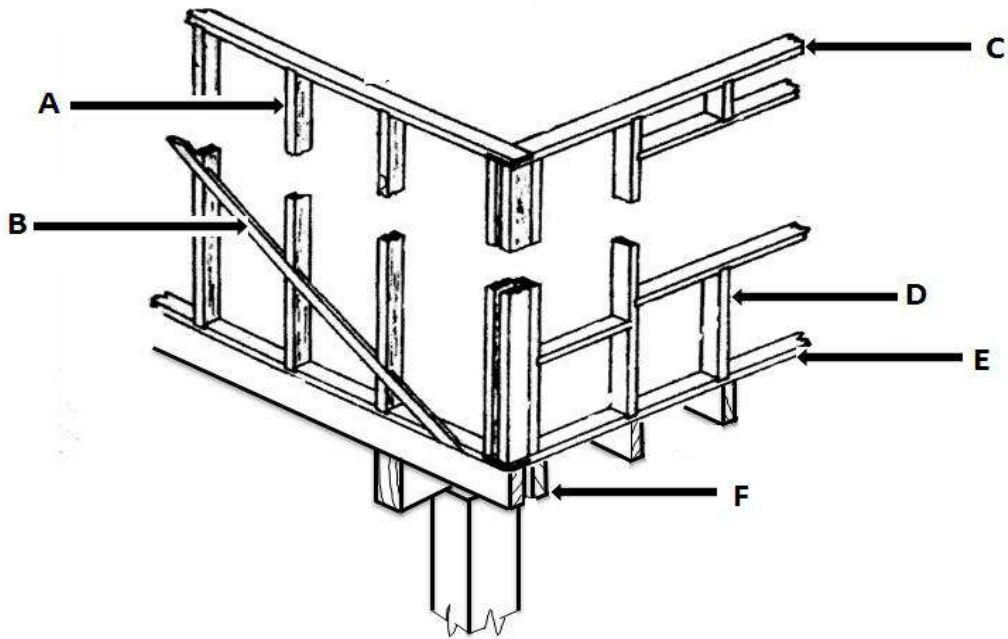
iii. Which TWO (2) suitable **finishes** is used for the above dressing stool?

Name: a. _____

b. _____

(2 marks)

29. Maryland Community High School needs to complete the floor and walls of the boys' dormitory. The skeletal structure of the house shown below indicates the parts that require to complete the dormitory.



- i. Name the parts that are indicated in the diagram above.

- A. _____
 B. _____
 C. _____
 D. _____
 E. _____
 F. _____

(6 marks)

The following timber order is required to complete the dormitory.

Quantity	Size	Length	Quality
300 pcs	100mm x 25mm	4 m	DAR Akwa
250 pcs	100mm x 50mm	3 m	DAR Akwa
100 pcs	150mm x 50mm	4 m	DAR Akwa

$1000\text{mm} = 1\text{m}$

$1,000,000 = 1\text{ m}^2$

- ii. Calculate the total number of cubic metres in the above timber order.
(Show all working out).

(4 marks)

- ii. Calculate the total cost of the above timber order, if a cubic metre of DAR Akwa cost \$450.00 at the Quality Timber Company in Honiara.

(2 marks)

30. Analyse and answer questions (i and ii) on electronics below.

i. How useful is a **resistor** in an electronic circuit?

(2 marks)

ii. Use the resistor's colour code below to calculate the resistance and percentage of tolerance for the following resistors. (**Show all your working out**).

4 band color code resistor

Color	1 st digit	2 nd digit	Multiplier	Tolerance
Black	0	0	10^0	
Brown	1	1	10^1	1% (F)
Red	2	2	10^2	2% (G)
Orange	3	3	10^3	
Yellow	4	4	10^4	
Green	5	5	10^5	0.5% (D)
Gold			10^{-1}	5% (J)
Silver			10^{-2}	10% (K)

	Band 1	Band 2	Band 3	Band 4
Resistor A	yellow	yellow	Brown	silver
Resistor B	green	red	green	No band
Resistor C	orange	yellow	orange	Gold

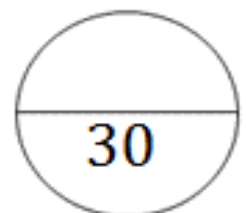
Value of Resistor A: _____

Value of Resistor B: _____

Value of Resistor C: _____

(6 marks)

Total marks for Section C:



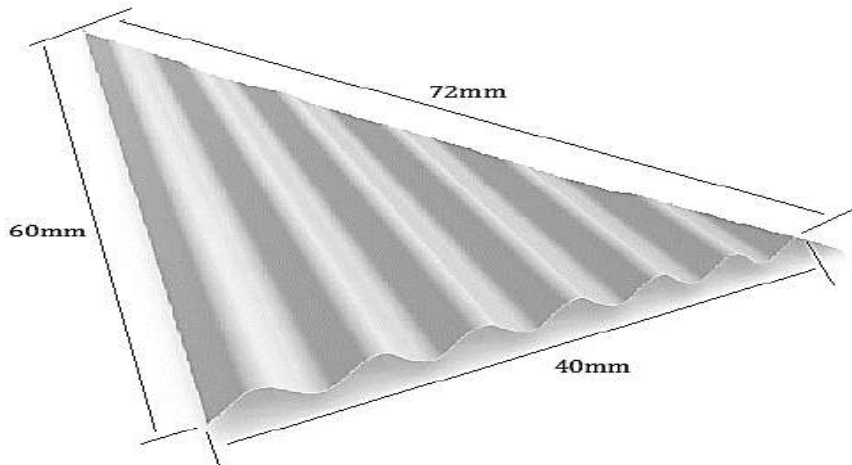
SECTION D: REASONING AND EVALUATION QUESTIONS

(30 MARKS)

ANSWER EACH QUESTION ON THE SPACES PROVIDED.

31. Study and observe the situation given below.

Isaac is a Form 5 student at Gizo Community High School. He found a piece of corrugated iron roofing, a leftover from a newly built staff house. The triangular shaped sheet is 60mm in length, 40mm width and a hypotenuse distance of 72mm. He decided to make a useful home article for his mother, but he still not decide on one yet. So he then asked you, if you could assist him with the article.



i. Name the **article** to be made.

Name: _____

(1 mark)

ii. State THREE (3) necessary tools needed for the construction.

A. _____

B. _____

C. _____

(3 marks)

iii. State any FOUR (4) construction processes to complete the article.

A. _____

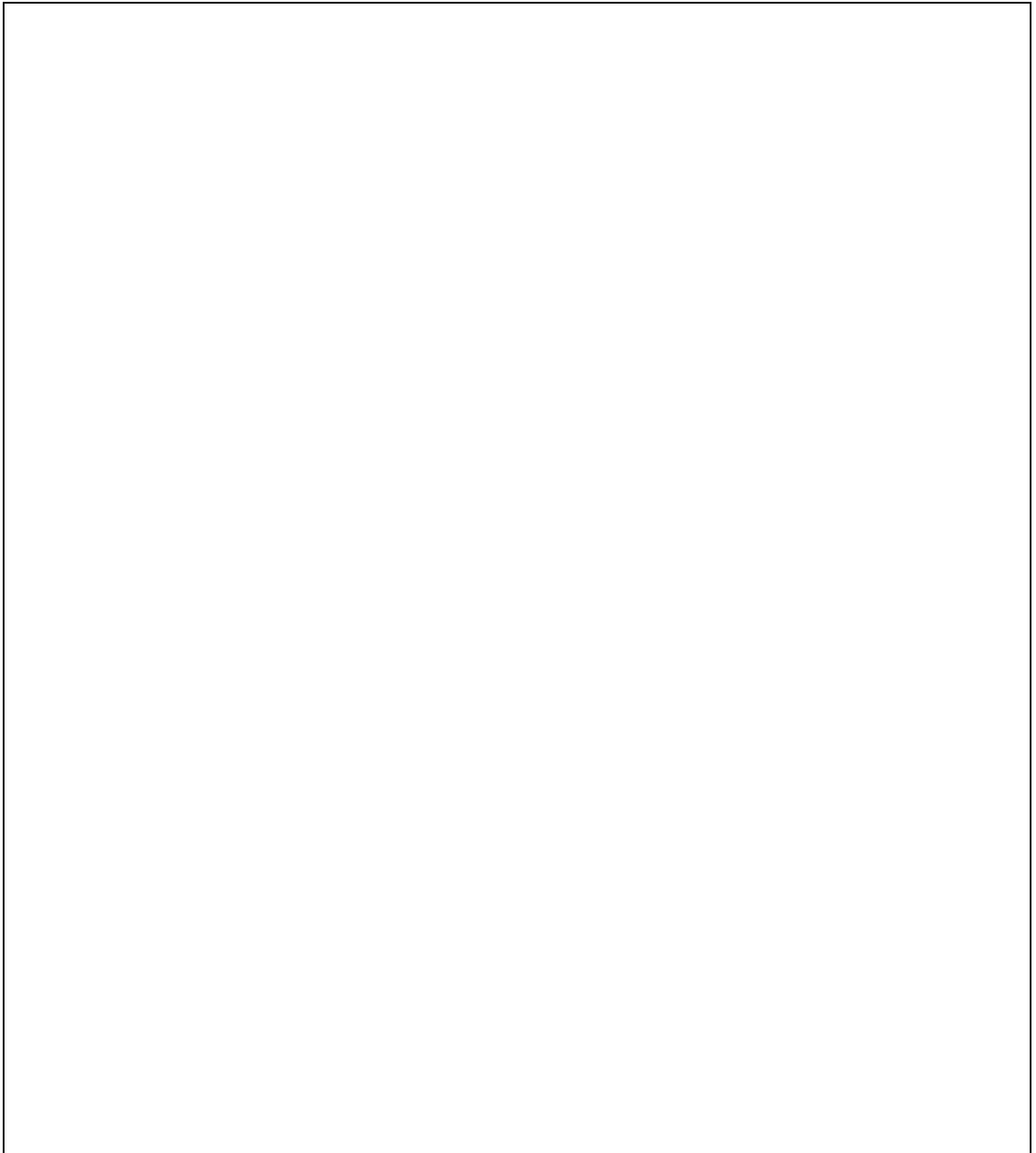
B. _____

C. _____

D. _____

(4 marks)

- a. Sketch a pictorial (isometric or oblique) drawing of the complete article including the major dimensions. (***including dimensions***).



(4 marks)

Design a **scraper head** for your school kitchen from the steel pipe scrape shown below. The design must be able to grate fine coconut grating, accommodate the coconut shell, scrape coconut evenly and fixed firmly to the seater. **(Only design the device head)**.

32. Study the given situation below, then answer questions (i – v):

Situation:



i. Write a **Design Brief** for the situation above.

(2 marks)

ii. State THREE (3) **Design Specifications** for the Design Brief in (i) above.

A. _____

(1 mark)

B. _____

(1 mark)

C. _____

(1 mark)

iii. Sketch THREE (3) likely **solutions** for the Design Brief in (ii).

Ideas	Sketches
1	
2	
3	

(3 marks)

iv. Choose ONE (1) of the ideas sketched in (iii) that you will use as your final solution. State TWO (2) reasons for choosing the solution.

Selected Solution: _____

The TWO (2) reasons to justify your selection;

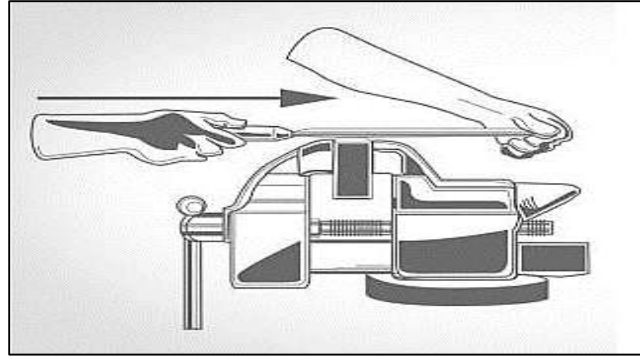
A. _____

(1 mark)

B. _____

(1 mark)

- v. The most used filing method for the above construction is cross-filing as shown below.



Explain what is cross-filing.

(2 marks)

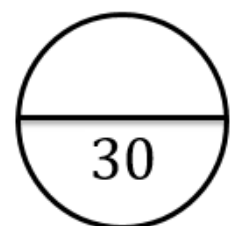
33. State the necessary **GRP tools** to repair the front of the canoe hull below.



	Processes	Suitable tool and material
1	To chip and remove damaged material.	
2	To clean and smoothen the damaged spot.	
3	To size the stranded map.	
4	To apply resin and rid air bubbles on resin.	
5	Trimmed the harden resin along the canoe hull.	
6	Name the final finish (pigment).	

(6 marks)

Total marks for Section D:



**SISC – INDUSTRIAL ARTS/
DESIGN TECHNOLOGY 2018**

**SECTION A
MULTIPLE CHOICE (20 MARKS)**

Write the letter of the correct answer in the box provided. Make sure your answer is put alongside the right question number.

Example: If you consider A is the correct answer, write it like this:

To change your answer from A to C, cross out A and write the new answer by the box, like this:



C

CENTRE NUMBER

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CANDIDATE NUMBER

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FOR MARKERS USE ONLY

SECTION	MARKS	MARKER	SCRIPT CHECKER
A	20		
B	20		
C	30		
D	30		
TOTAL	100		
Marker / Checker Initials			

1	<input type="text"/>	11	<input type="text"/>
2	<input type="text"/>	12	<input type="text"/>
3	<input type="text"/>	13	<input type="text"/>
4	<input type="text"/>	14	<input type="text"/>
5	<input type="text"/>	15	<input type="text"/>
6	<input type="text"/>	16	<input type="text"/>
7	<input type="text"/>	17	<input type="text"/>
8	<input type="text"/>	18	<input type="text"/>
9	<input type="text"/>	19	<input type="text"/>
10	<input type="text"/>	20	<input type="text"/>