LABASA SANGAM (SKM) COLLEGE

YEAR 12

APPLIED TECHNOLOGY

WORKSHEETS

SECTION A MULTIPLE-CHOICE QUESTIONS [20 marks]

1. Which of the following footwear protects the feet from injury?

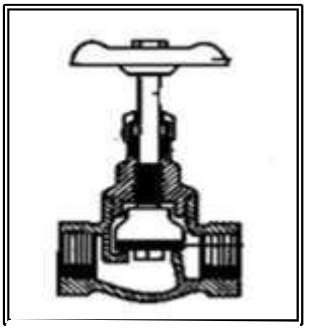
A. Leather boots
B. Low-cut boots
C. Steel cap boots
D. High-cut boots

2. The main objective of the design process is to

A. solve a problem.
B. solve the specification.
C. produce the correct dimensions.
D produce many possible solutions.

3. The plumbing equipment shown on the right is known as the

A. bib tap.
B. pillar tap.
C. gate valve.
D. globe valve.

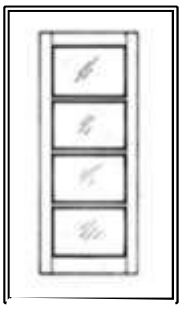


Source: *Applied Technology,* Ministry of Education, 2013.

4. Which of the following is a non-ferrous metal?

A. Steel
B. Copper
C. Cast iron
D. Wrought iron

5. The type of door shown on the right is



Source: *Applied Technology,* Ministry of Education, 2013.

A. glazed.
B. panelled.
C. ledge and brace.
D. framed ledge and brace.

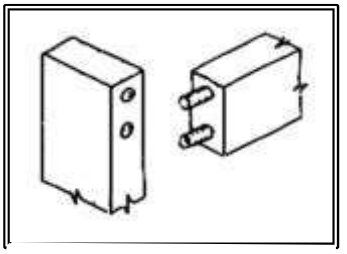
6. The colour code used for the acetylene cylinder in gas welding is

A. red.
B. blue.
C. black.
D. maroon.

7. Traps are used in sanitary fitting to

A. supply clean and fresh water at all times.
B. prevent the entry of foul gas into a building.
C. stop the over-flowing of sanitary appliances.
D. ease the flow of waste products out from a building.

8. Which type of corner joint is shown in the diagram on the right?



Source: *Applied Technology,* Ministry of Education, 2013.

A. Dowel
B. Bareface
C. Widening
D. Rebated Butt

9. Which of the following is the **main** cause of injuries in the workshop?

A. Incorrect use of tools
B. A congested working area
C. Improper storage of the tools
D. Adequate ventilation and lighting

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10. The person who comes up with an idea and takes the initiative in setting up a venture to generate income is known as a/an

A. Artist.
B. Designer.
C. Architect.
D. Entrepreneur.

11. The design principle which has all parts of the visual image related to and complementing each other is

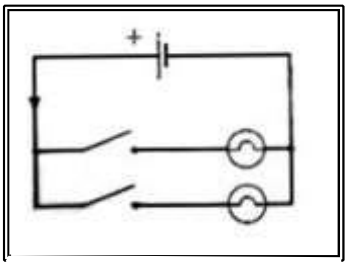
A. proportion.
B. repetition.
C. harmony.
D. rythym.

12. The process in which low carbon steel is coated with zinc is

A. tinning.
B. annealing.
C. galvanizing.
D. normalising.

13. Which type of circuit diagram is shown on the right?

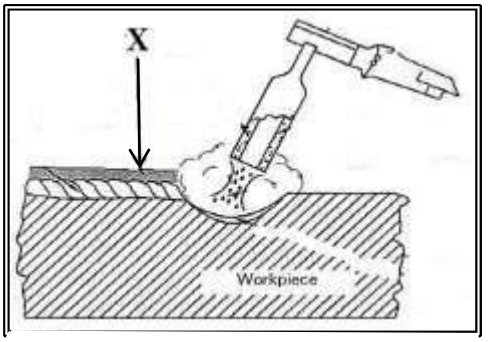
A. Direct
B. Series
C. Parallel
D. In-direct



Source: *Applied Technology,* Ministry of Education, 2015.

14. The part labelled **X** on the diagram is a/an

A. slag.
B. electrode.
C. flux coating.
D. gaseous shield.



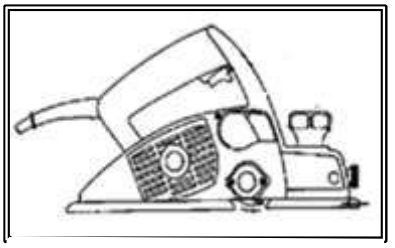
Source: *Applied Technology,* Ministry of Education, 2015.

15. In face plate turning, what precaution needs to be taken if the end of the timber burns where the centre is fitted?

A. Loosen the dead centre
B. Tighten the dead centre
C. Change the dead centre
D. Lubricate the dead centre

16. Which of the following portable machines is shown in the diagram below?

A. Circular saw
B. Surface planner
C. Router machine
D. Sanding machine



Source: *Applied Technology,* Ministry of Education, 2017.

17. Which of the following materials is used as an insulator in electrical wiring?

A. Glass
B. Wood
C. Metal
D. Plastic

18. Trees which have branches growing in different levels are classified as

A. angiosperm.
B. exotic timber.
C. gymnosperms.
D. non-porous timber.

19. The coil of copper tubes installed in refrigerators is the

A. generator.
B. condenser.
C. evaporator.
D. compressor.

20. In air conditioning, the temperature at which the water vapour in the air begins to condense is the

_____ Temperature.

A. Dry Bulb
B. Wet Bulb
C. Dry Point
D. Dew Point

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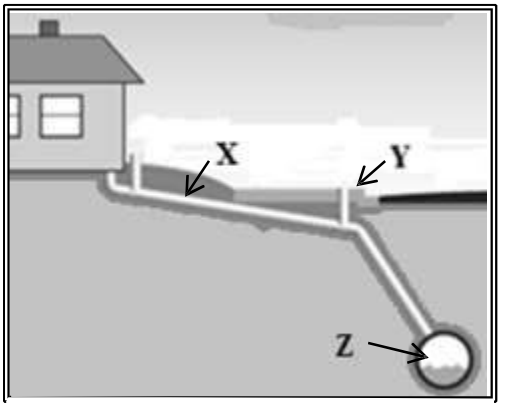
SECTION B **SHORT ANSWER QUESTIONS**

QUESTION 1 **BASIC HOME IMPROVEMENTS**

(a) Study the diagram of the sewer connection given below and answer the questions that follow.



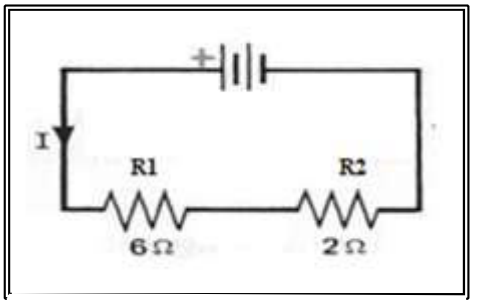
Source: *Applied Technology,* Ministry of Education, 2017.

(i) State the function of the part labelled **Y** above.

(ii) Explain the process which occurs between **X** to **Z**.

(b) A floor space of 4 m × 4 m is needed to be tiled. Calculate the total number of tiles to complete the floor if the size of one tile is 0.5 m × 0.5 m.

(c) A power dissipated (p.d) of 12 V is applied to two resistors (of 6 Ω and 2 Ω) connected to the series circuit shown below.



Source: *Applied Technology,* Ministry of Education, 2017.

Calculate the:

(i) combined resistance

(ii) current flow

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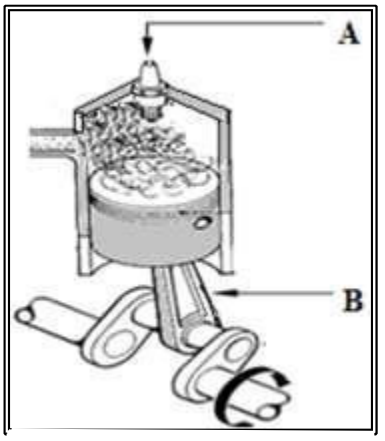
QUESTION 2 **MACHINES AND ENGINES**

(a) Study the diagram of the parts of a two stroke engine given below and answer the questions that follow.



Source: *Applied Technology,* Ministry of Education, 2015.

(i) Name the parts labelled **A** and **B**.

(ii) Using a freehand sketch, describe the **reciprocating motion** of the piston.

(b) Study the diagram of the portable machine given below and answer the questions that follow.

Source: *Applied Technology,* Ministry of Education, 2017.

(i) Name the machine shown above.

(ii) Explain the function of the machine.

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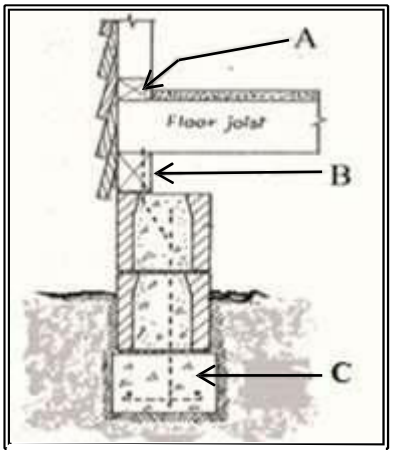
QUESTION 3 CARPENTRY

(a) Study the diagram given below and answer the questions that follow.

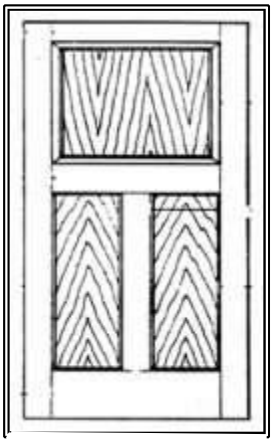


Source: *Applied Technology,* Ministry of Education, 2015.

(i) Sketch how the floor joist is fixed to part **A** and **B**.

(ii) Explain the function of part **C** shown in the diagram above.

(b) Study the diagram of a three panel door given below and answer the questions that follow.



Source: *Applied Technology,* Ministry of Education, 2015.

(i) Produce freehand sketches to show how the frames are fixed.

(ii) Name **one** type of hinge used for the door above.

(iii) State **one** reason for your choice.

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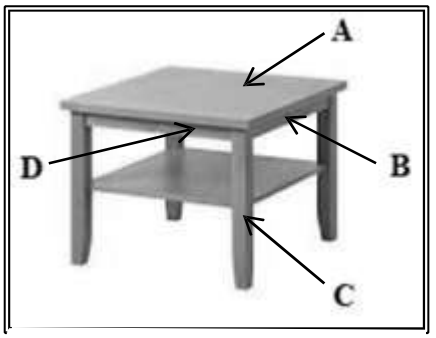
QUESTION 4 **JOINERY**

(a) Study the diagram given below and answer the questions that follow.

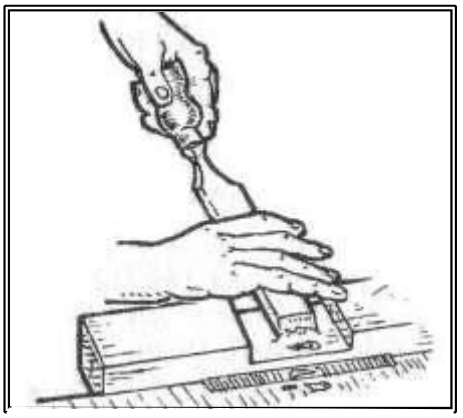


Source: *https://www.google.com.au*

(i) Draw the exploded view of members **B**, **C** and **D**.

(ii) Sketch how the part labelled **A** is connected to the frame.

(b) Study the diagram of the joinery process shown below and answer the questions that follow.



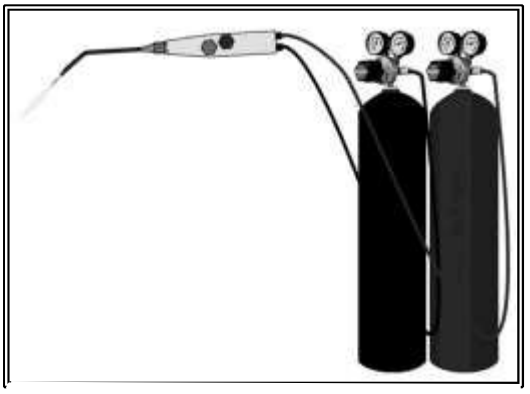
Source: *Applied Technology,* Ministry of Education, 2015.

(i) Describe **one** of the steps used in preparing the timber for the joint above.

(ii) Explain the process illustrated.

QUESTION 5 WELDING AND FABRICATION

(a) Study the diagram given below and answer the questions that follow.



Source: *https://www.google.com.au*

(i) State **one** advantage of gas welding.

(ii) Explain the term **brazing** in gas welding.

(iii) Differentiate between **oxygen** and **acetylene** in relation to their function in gas welding.

(b) There are numerous types of edges, joints, seams, and notches used to join sheet metal work.

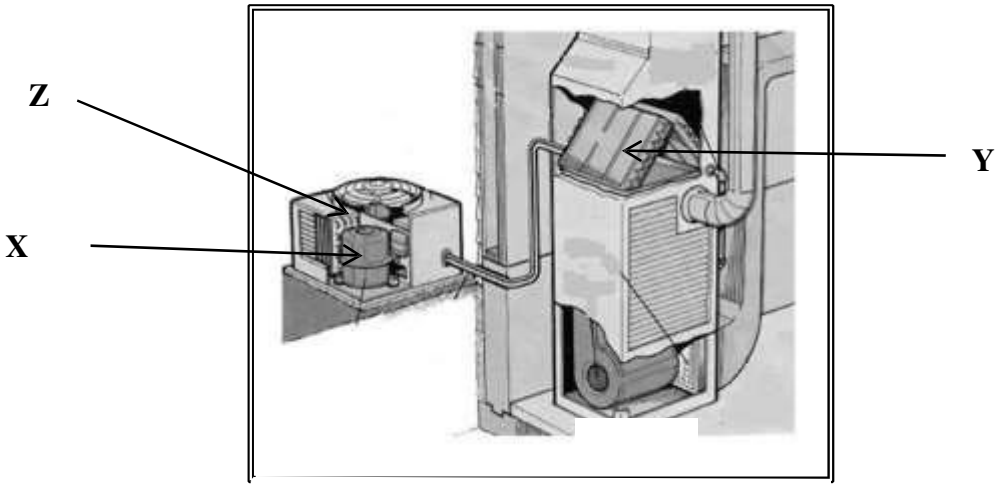
(i) State **one** reason for making edges in sheet metal work.

(ii) Use freehand sketches to show a wire edge formed in sheet metal work.

(iii) Explain the method of making lap seam joints in sheet metal work.

QUESTION 6 REFRIGERATION AND AIR CONDITIONING

(a) Study the diagram below and answer the questions that follow.



Source: *Applied Technology,* Ministry of Education, 2015.

(i) Label the parts **X**, **Y** and **Z** above.

(ii) Explain the function of one of the parts labelled above.

(b) Sketch the Refrigeration Cycle.

(c) The diagram given below shows a device used in refrigeration and air conditioning.

Source: *Applied Technology,* Ministry of Education, 2015.

(i) Name the device shown above.

(ii) State the use of the device.

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SECTION C DESIGNING

QUESTION 1

Design Problem:

The **pool-side chairs** in hotels are difficult to store.

Design Brief:

Design a **pool-side chair** that can be easily stored.

Specifications:

The **pool-side chair** should:

- be portable;
- cater for two people;
- be made of readily available materials;
- have a headrest that can be raised and lowered;
- be easily folded using mechanical joint for limited storage space.

Requirements:

(a) Produce pictorial freehand sketches of **two** possible solutions and **label** the parts.

(b) Draw a pictorial rendered freehand sketch of the final solution taking ideas from the two possible solutions.

(c) Produce a detailed drawing to show the joint between any two members.

(d) Explain how the **pool-side chair** will be stored.

(e) Evaluate your final solution on the following criteria:

(i) Safety

(ii) Materials used

(iii) Functionality

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QUESTION 2

Design Problem:

On a farm, the storage of farming tools becomes difficult because of limited space in the tool room.

Design Brief:

Design a **storage device** for storing farming equipment in tool rooms without taking up more spaces.

Specifications:

The **storage device** should:

- be portable;
- cater for a minimum of 6 tools;
- be made up of metal and other materials;
- be elegant and stylish, incorporating current market trends;
- be easily stored and use mechanical joints.

Requirements:

(a) Produce pictorial freehand sketches of **two** possible solutions and **label** the parts.

(b) Draw a pictorial rendered freehand sketch of the final solution taking ideas from the two possible solutions.

(c) Produce a detailed drawing to show the joint between any two members.

(d) Explain how to prevent the metal parts from rusting.

(e) Evaluate your final solution on the following criteria:

(i) Safety

(ii) Materials used

(iii) Functionality

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QUESTION 3

Design Problem:

A community requires electricity for lights, refrigerators and other electrical appliances.

Design Brief:

Design a **mechanism** that will produce electricity.

Specifications:

The **mechanism** should be:

- portable and powered by renewable energy;
- affordable and environment-friendly;
- of a reasonable size and takes less space;
- made of materials that are readily and locally available;
- elegant and stylish, incorporating current market trends.

Requirements:

(a) Produce pictorial freehand sketches of **two** possible solutions and label the parts.

(b) Draw a pictorial rendered freehand sketch of the final solution taking ideas from the two possible solutions.

(c) Produce a detailed drawing of how any **two** members are fixed together.

(d) Explain how electricity is produced using the device.

(e) Evaluate your final solution on the following criteria:

(i) Safety

(ii) Materials used

(iii) Functionality