Candidate Number	Candidate Name

JUNIOR SECONDARY CERTIFICATE

DESIGN AND TECHNOLOGY 1808/1

PAPER 1 2 hours 15 minutes

Marks 120 **2018**

Additional materials: A3 drawing paper
Standard drawing equipment

INSTRUCTIONS AND INFORMATION TO CANDIDATES

- Write your Candidate Number and Name in the spaces at the top of this page and on all separate answer paper used.
- Use a dark blue or black pen.
- Use a pencil for diagrams, graphs or rough working.
- Do not use correction fluid.
- The number of marks is given in brackets [ ] at the end of each question or part question.
- You may use a non-programmable calculator.

Section A

- Answer **all** the questions in Section A.
- Write your answers in the spaces provided.
- Spend about 30 minutes on Section A.

Section B

- Answer **all** the questions in Section B.
- Answer Question 11 on the separate A3 drawing paper.
- At the end of the examination, fasten your A3 work to this question paper.
- Answer Questions 12 and 13 in the spaces provided.
- Spend about 35 minutes on each question in Section B.

For Examiner's Use		
Part A		
Part B	**11**	.....
	12	.....
	13	.....
TOTAL		

This document consists of **17** printed pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

[Turn over

Section A

For Examiner's Use

Answer **all** the questions in Section A in the spaces provided.

1 Fig. 1 shows a wood lathe.

Fig. 1

(a) Give **two** safety precautions when using a lathe.

1 .....

.....

2 .....

..... [2]

(b) Fig. 2 shows that the electric cable of the lathe has a defect.

Fig. 2

State a possible accident that might occur as a result of the defect.

.....

..... [1]

2 Fig. 3 shows a laminated wooden rocking chair.

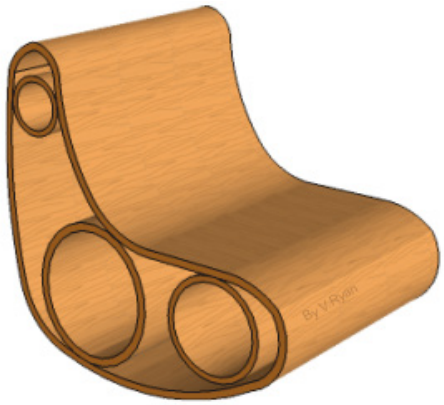

Fig. 3

Briefly describe the laminating process.

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.....

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..... [3]

3 Fig. 4 shows a cool drink can.

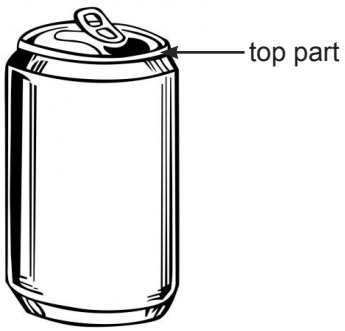


Fig. 4

(a) Name a suitable snip to cut off the top part of the can.

..... [1]

(b) Give **two** uses of the snip mentioned in **(a)**

1 .....

.....

2 .....

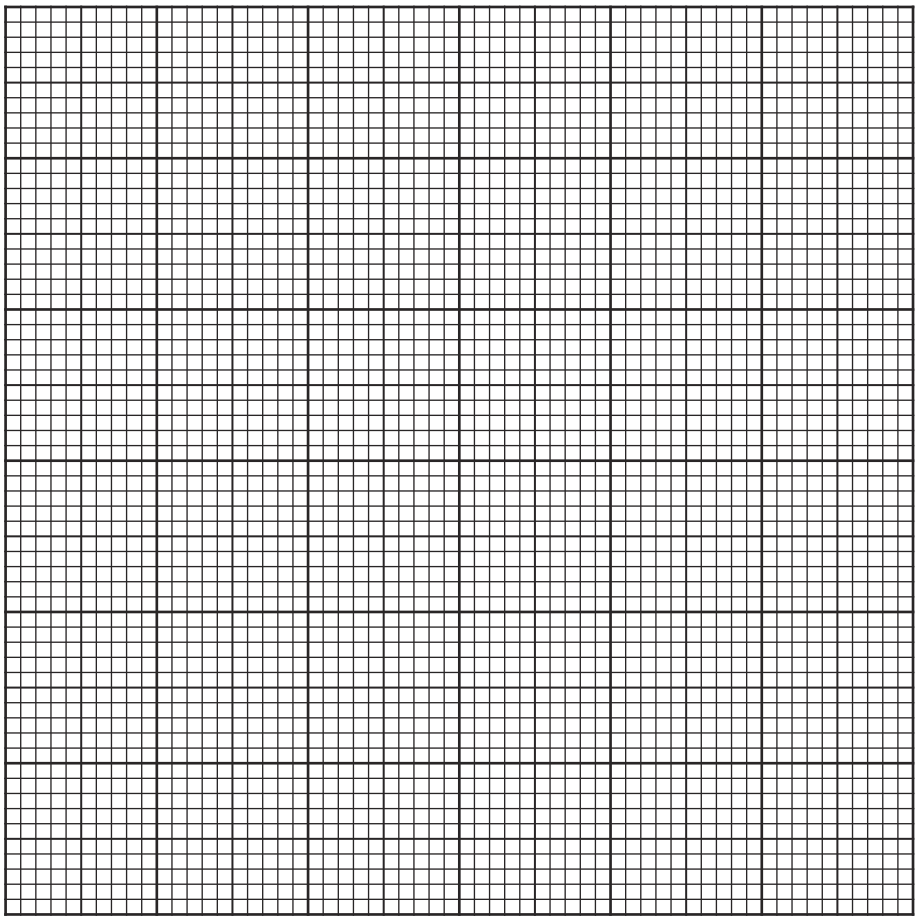
..... [2]

4 The number of bed-sheets manufactured by a factory in Namibia is transported by ship during five consecutive weeks as given below.

For Examiner's Use

Week	Number of sheets
1	200
2	450
3	250
4	400
5	100

Draw a graph representing the above data.



[4]

5 Fig. 5 shows a photo of the waterfall at Ruacana that is used to generate hydro electric power.

For Examiner's Use

Fig. 5

Explain how the electricity is generated in the hydro power plant.

.....

.....

.....

.....

.....

..... [3]

For Examiner's Use

6 Fig. 6 shows a man and his child on a see-saw.

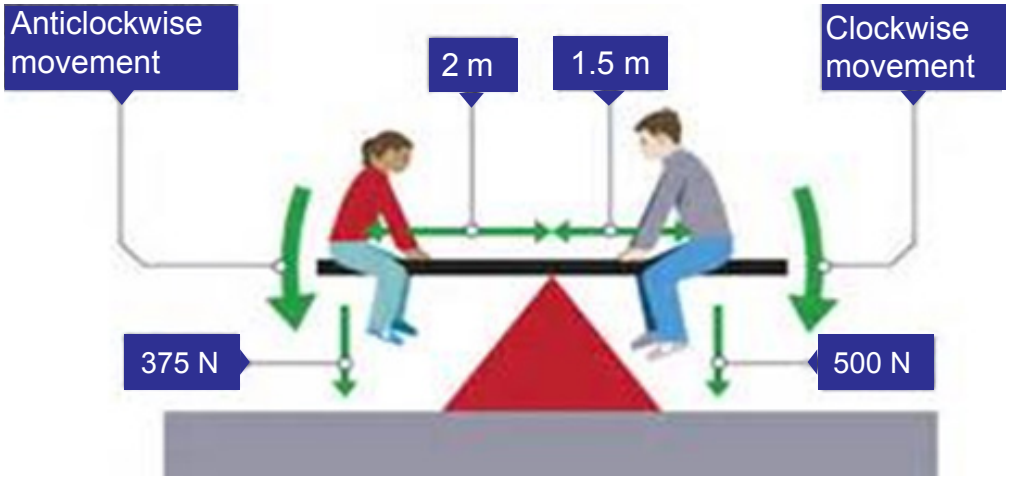


Fig. 6

Prove that the lever system in Fig. 6 is in equilibrium.

.....

.....

.....

.....

..... [3]

7 Fig. 7 shows an electric kettle. It is a 220 V kettle which draws 5 A.

Fig. 7

Calculate the power consumption.

.....

.....

.....

.....

..... [3]

8 Fig. 8 shows a man carrying a box in a storeroom.

Fig. 8

(a) Name **one** safety hazard that appears in Fig. 8.

1 ..... [1]

(b) Explain how **one** of the hazards in **(a)** can be corrected.

.....

.....

.....

..... [2]

For Examiner's Use

9 Fig. 9 shows part of a cargo container with its doors open.

Fig. 9

Produce, freehand, an approximate 60 x 30 x 30 isometric drawing of the container with its doors open.

[3]

10 Design a simple closing mechanism for the doors of the container in Fig. 9.

[3]

[30]

Section B

For Examiner's Use

11 Graphics and Graphic Products

Use the prepared A3 drawing paper to answer Question 11.

Fig. 10 shows a fishing rod holder on a boat.

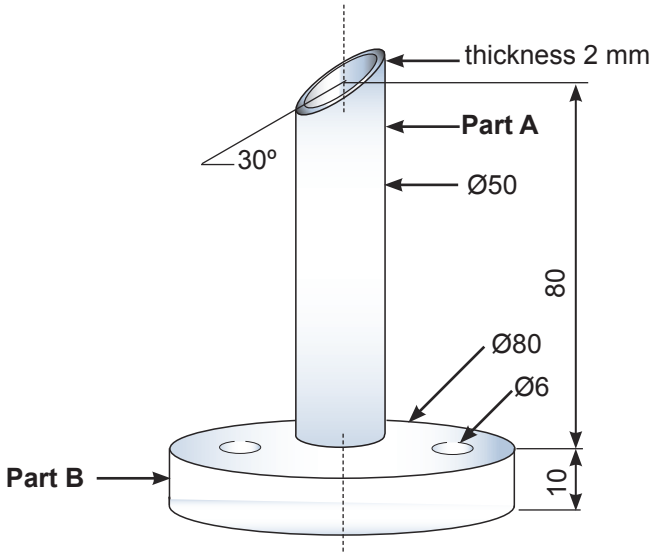


Fig. 10

(a) Use the space for **11 (a)** to complete the title, *fishing rod holder*.
Use the same style and spacing as used for the given letters. [5]

(b) Draw the true shape of the truncated end of the cylinder.
Ignore the thickness of the metal and use the outside diameter to complete the drawing. [8]

(c) Draw a complete surface development of the truncated cylinder, **Part A.**
Apply appropriate geometrical constructions, drawing techniques. [12]

(d) Draw an isometric freehand view of **Part B** of the holder.
Use pencil shading to show that the fishing rod holder is made of a shiny metal. [5]

[30]

12 Resistant Materials

For Examiner's Use

Write your answers in the spaces provided.

Answer Question 12 in the spaces provided on the question paper.

(a) Fig. 11 shows a defect in timber.

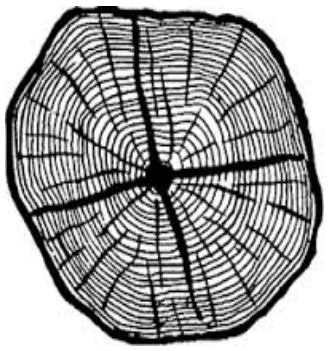


Fig. 11

Describe **two** causes of the defect in Fig.11.

1 .....

.....

.....

.....

2 .....

.....

.....

..... [4]

(b) Fig. 12 shows an insect sometimes attacking timber.

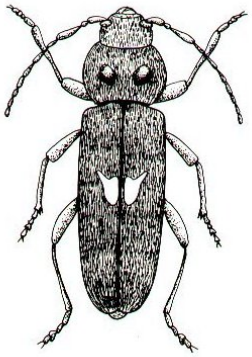


Fig. 12

Name **three** methods to prevent insect attacks on timber.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(c) Fig. 13 shows a wooden toy ship.

Fig. 13

(i) Give **three** reasons why the toy ship in Fig.13 needs finishing.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(ii) Suggest **three** suitable finishes for the toy ship.

1 .....

2 .....

3 ..... [3]

(d) Fig.14 shows eating trays used by the crew. The trays are produced by vacuum forming.

Fig. 14

(i) Name **three** safety precautions to consider when producing the trays by vacuum forming.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(ii) Describe vacuum forming at the hand of sketches.

[8]

For Examiner's Use

(e) Ships are repaired at the dry docks in a harbour when leakages appear.

Fig.15 shows methods for cutting the metal for repairs for the ship.

A **B**

Fig. 15

(i) Describe the safety procedures for the cutting method in Fig. 15 **A**.

.....

.....

.....

..... [2]

(ii) Compare the **two** cutting methods in Fig. 15.

.....

.....

.....

..... [4]

[30]

13 Technology

For Examiner's Use

Write your answers in the spaces provided.

Answer Question 13 in the spaces provided on the question paper.

(a) Fig.16 shows a man angling.

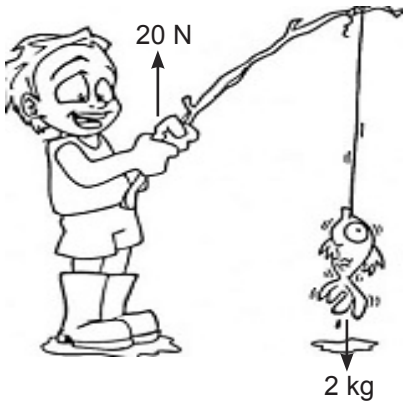


Fig. 16

(i) Name the type of lever shown in Fig. 16.

..... [1]

(ii) The fish has a mass of 2 kg and the effort by the man is 20 N.

Calculate the Mechanical Advantage (MA) of the lever system shown.

.....

.....

.....

.....

.....

..... [3]

For Examiner's Use

(b) Fig.17 shows a crane loading wood on a ship.

Fig. 17

(i) Identify the type of structure of the crane cabin.

…… [1]

(ii) Indicate, on the figure, a member that is under

compression. [1]

tension. [1]

(iii) Give a name for a member that is under

compression..... [1]

tension..... [1]

(iv) State the type of motion at **Part A**.

..... [1]

(c) Fig.18 shows a sail ship that uses diesel fuel for the engine as well as sails to move forward.

Fig. 18

(i) Describe the energy conversion that is taking place when the ship is using diesel to move.

.....to

.....to

.....to

..... [4]

(ii) Name the source of energy that can be used when there is no diesel.

……. [1]

(d) Fig.19 shows a mechanism to close the doors of a ship hydraulically.

Fig. 19

(i) State the main difference between hydraulics and pneumatics.

Hydraulic: ……

.....

Pneumatic: ……

..... [2]

(ii) Give **two** advantages of pneumatics compared to hydraulics.

1 .....

.....

2 .....

..... [2]

(iii) Name **three** examples in everyday life where pneumatics are used.

1 .....

.....

2 .....

.....

3 .....

..... [3]

(e) Fig. 20 shows a 2000 kg reservoir at the harbor that must be filled with fresh water. The tank is 30 m above the water supply and it take 12 minutes to fill the reservoir. Use gravity as 10N/kg

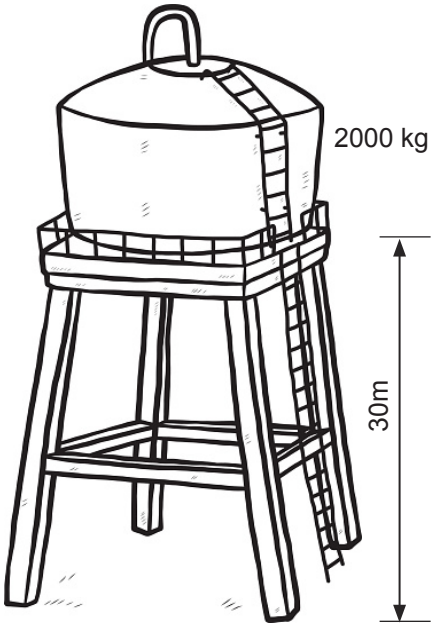


Fig. 20

Calculate

(i) the work done to fill the reservoir.

.....

.....

.....

..... [4]

(ii) the output power of the pump.

.....

.....

.....

.....

..... [4]

[30]