Candidate Number	Candidate Name

JUNIOR SECONDARY CERTIFICATE

DESIGN AND TECHNOLOGY 1808/1

PAPER 1 2 hours 15 minutes

Marks 120 **2017**

Additional Materials: A3 drawing paper
Non-programmable calculator
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 **18** printed pages and **2** A3-answer sheets.

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 Design and Technology can improve our lives, but unfortunately it also sometimes have negative effects on society and the environment.

Study Fig. 1 and answer the questions that follow.

(a)

(b)

(c)

Fig. 1

Complete the table by listing **one** possible positive and **one** possible negative effect for each of **(b)** and **(c)**. **(a)** has been done as an example for you.

Technology	**Possible positive effects**	**Possible negative effects**
(a) House	More comfortable and safe living environment, job creation	Depletion of natural resources use of farming land for living space
(b) Car	....	....
(c) Bulldozer	. ...	....

[4]

2 Fig. 2 shows a disorganised workshop.

Fig. 2

Identify **two** safety hazards in this workshop.

1 .....

.....

2 .....

..... [2]

3 Fig. 3 shows an electrical impact drill that needs a plug.

Fig. 3

State **two** safety precautions that need to be adhered to when doing minor maintenance to electrical power tools.

1 .....

.....

2 .....

..... [2]

4 Divide, using instruments, the line in Fig. 4 into **four** equal parts. Show all constructions.

For Examiner's Use

Fig. 4

[3]

5 Fig. 5 shows a triangle.

Draw, using instruments, an inscribed circle in the triangle. Show all constructions.

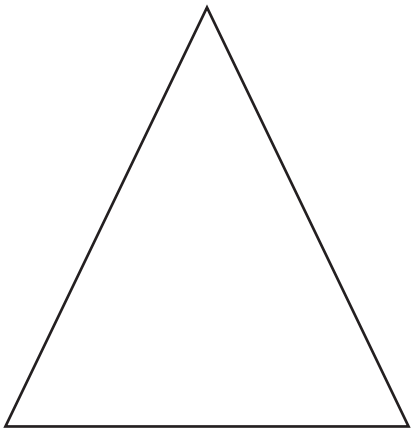

Fig. 5

[3]

For Examiner's Use

6 From the list below, select the correct name for each of the tools shown.

marking gauge, smoothing plane, sliding bevel, try square

Give a specific use for each tool.

Tool	Name	Use
	.....	....
	.....	....

[4]

7 Fig. 6 shows two different types of wood screws used in joinery.

A **B**

Fig. 6

Identify the **two** types of wood screw.

A .....

B ..... [2]

For Examiner's Use

8 Fig. 7 shows a desk tidy.

Fig. 7

The desk tidy is made from injection moulded plastic and is available in a range of colours.

List **three** specifications for the desk tidy.

1 .....

.....

2 .....

..... [3]

9 Fig. 8 shows a logic gate.

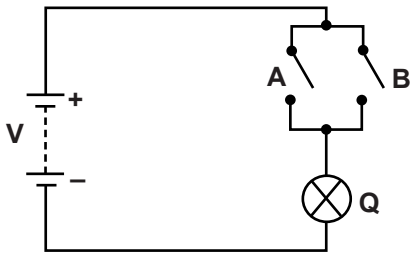

Fig. 8

(a) Identify the logic gate.

..... [1]

(b) Complete the truth table for the logic gate.

A	B	Q
0	0	0
0	1	
1	0	
1		1

[3]

10 Fig. 9 shows a drawing of a person trying to lift a weight.

Write the correct keyword in the spaces provided.

Use the following keywords: load, effort, fulcrum.

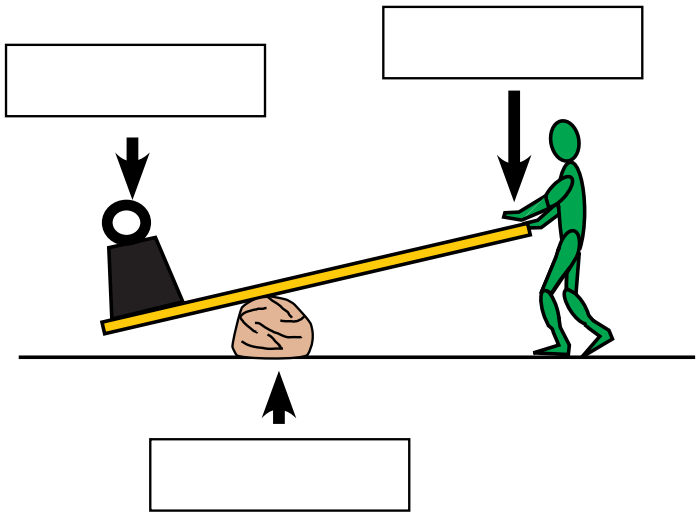

Fig. 9

[3]

[30]

Section B

11 Graphics and Graphic Products

Answer Question 11 on the separate A3 paper provided.

(a) Fig. 10 shows a drawing of a toy helicopter.

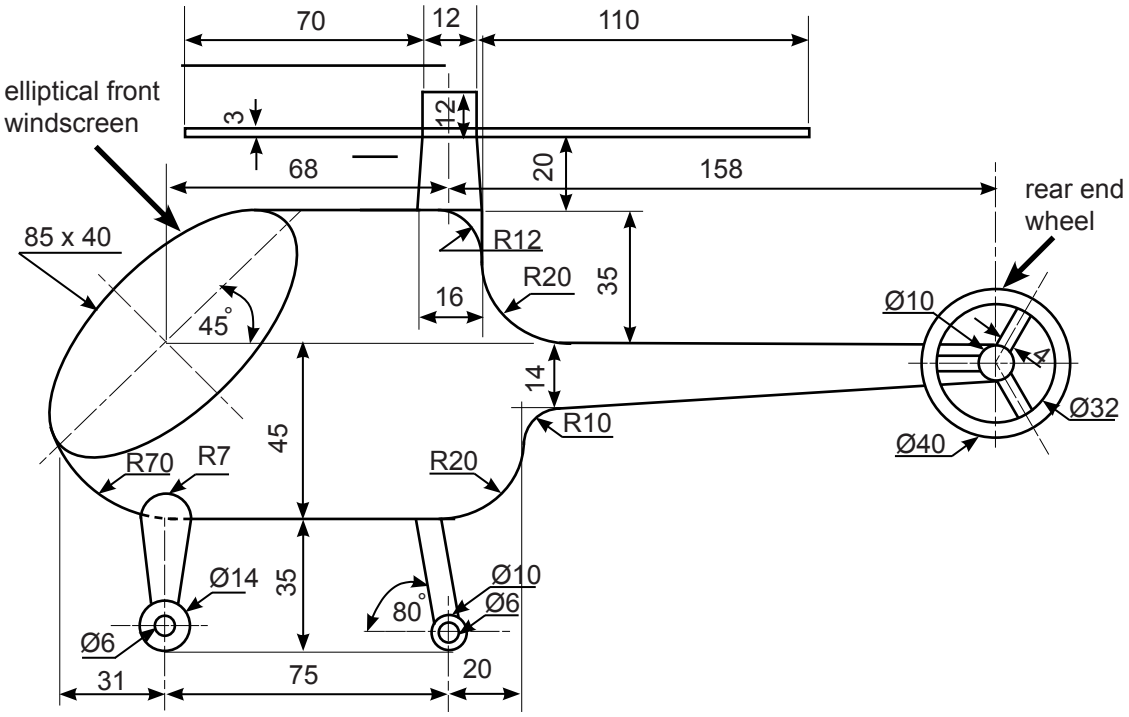

Fig. 10

(i) Use the information in Fig. 10 to draw to **scale 1:1,** the elliptical front windscreen of the helicopter. [6]

(ii) Draw to **scale 3:1** an isometric view of the rear end wheel. Do not show any hidden detail. [7]

(iii) Use any appropriate lettering style to write isometrically the title, "WHEEL", underneath your drawing of the rear end wheel. [3]

(b) Fig. 11 shows part of the wheel assembly of the toy helicopter.

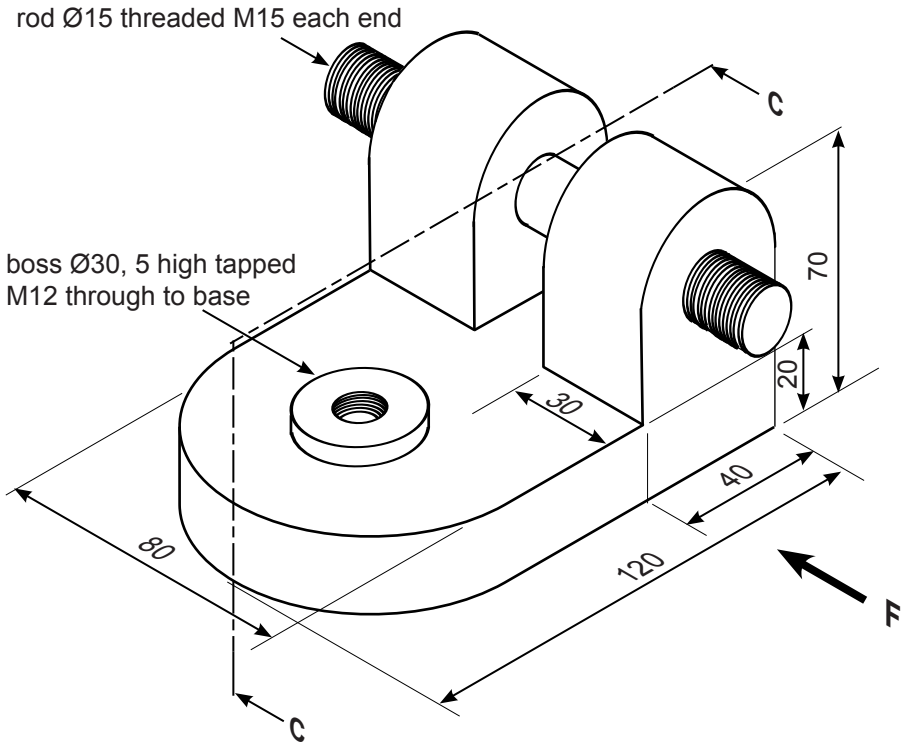

Fig. 11

Draw to **scale 1:1** in the space prepared for **11(d)**

(i) a full sectional front view on sectional line **C-C**. [7]

(ii) an outside left view of the part in Fig. 11. [7]

[30]

12 Resistant Materials

For Examiner's Use

Write your answers in the spaces provided.

(a) Fig. 12 shows a grey pot plant holder made from a thermoplastic.

Fig. 12

(i) Name a specific thermoplastic to manufacture the pot plant holder.

..... [1]

(ii) Identify **two** properties of the plastic chosen in **(a)(i)** that makes it suitable for the pot plant holder.

1 .....

.....

2 .....

..... [2]

(iii) Explain how the colouring of the pot plant holder was achieved.

.....

.....

..... [2]

(iv) Name the process used to form the pot plant holder.

.....

..... [1]

(b) Fig. 13 shows a thermoplastic table for the plant holder.

Fig. 13

(i) Name a thermoplastic suitable to make the table.

..... [1]

(ii) State **two** reasons (referring to properties) for your answer in **(b)(i)**.

1 .....

.....

2 .....

..... [2]

(iii) Compare a *monomer* and a *polymer*.

.....

.....

.....

..... [2]

For Examiner's Use

(c) Fig. 14 shows depictions of three types of welding.

A **B** **C**

Fig. 14

(i) Identify the types of welding in **A**, **B** and **C**.

A .....

B .....

C ..... [3]

(ii) The procedures identified in **(a)(i)** are permanent joining methods.
Name **two** temporary joining methods for metal.

1 .....

2 ..... [2]

(iii) Explain why it is called temporary joining methods.

.....

.....

.....

..... [2]

(d) Fig. 15 shows rusted nuts and bolts.

Fig. 15

(i) Describe briefly how to prevent nuts and bolts from rusting.

.....

.....

..... [2]

(ii) Instead of mild steel nuts and bolts, stainless steel nuts and bolts can be used. Name the property of stainless steel that makes it suitable for outside use.

.....

..... [1]

(e) Fig. 16 shows a wooden stool.

Fig. 16

(i) State, giving **one** reason, a suitable hardwood to make the stool.

Hardwood ..... [1]

Reason .....

..... [1]

softwood to make the stool.

Softwood ..... [1]

Reason.....

..... [1]

(ii) Give **two** safety features the stool should have.

1 .....

.....

2 .....

..... [2]

(iii) Use sketches and notes to show an **exploded view** of a type of joint that could be used at **X**.

For Examiner's Use

[3]

[30]

For Examiner's Use

13 Technology

Write your answers in the spaces provided.

(a) Fig. 17 shows a diagram of three forces acting on a piece of steel.

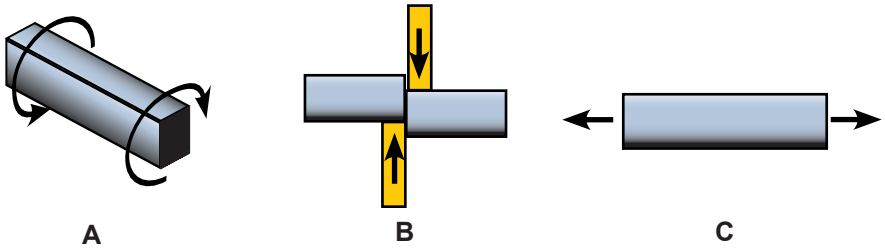

Fig. 17

(i) Name the **three** forces as shown in Fig. 17.

A .....

B .....

C ..... [3]

(ii) State the effect that each force will have on the piece of steel in Fig. 17.

A .....

.....

B .....

.....

C .....

..... [3]

(b) Fig. 18 shows two structural components.

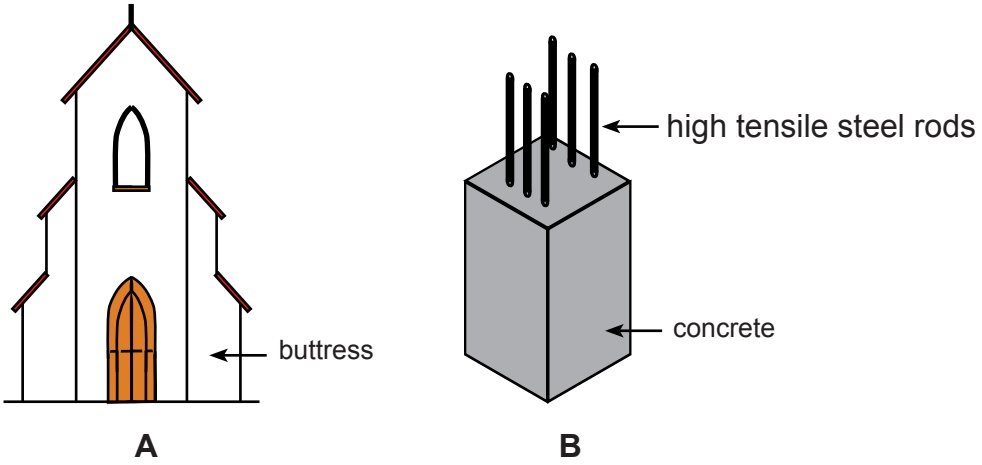

Fig. 18

Compare the basic structural components of the structures labelled **A** and **B**.

A .....

.....

.....

B .....

.....

..... [4]

(c) In Fig. 19, a spanner, 250mm long, is used to tighten a bolt.
A force of 150N is applied.

Fig. 19

Calculate the clockwise moment on the nut.

.....

.....

.....

.....

..... [3]

(d) Fig. 20 shows four electrical appliances.

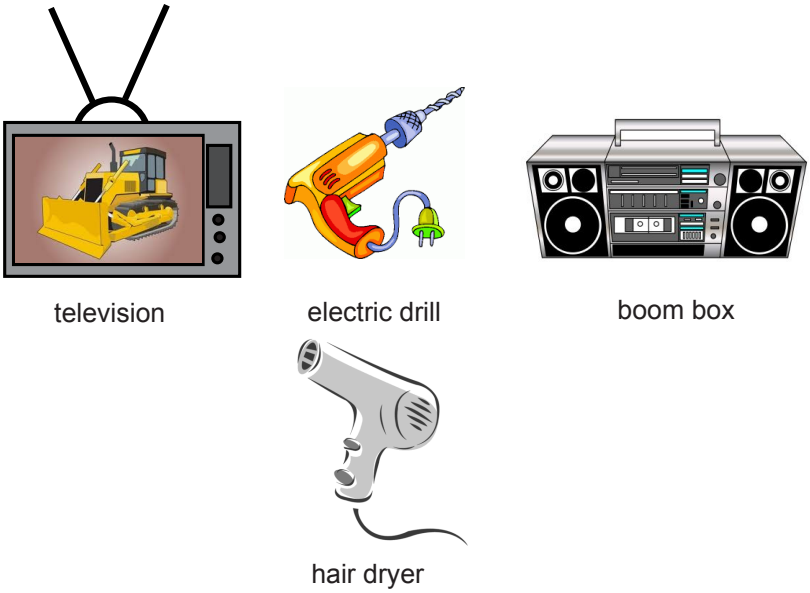

Fig. 20

Choose any **one** appliance and name an energy conversion taking place during its operation.

.....

.....

.....

..... [3]

(e) Fig. 21 shows the circuit diagram for a light sensing circuit.

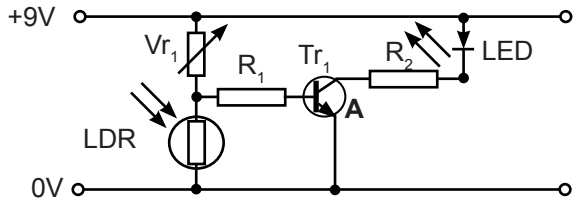

Fig. 21

Fig. 22 shows a view of the underside of the printed circuit board (p.c.b.) for the light sensing circuit.

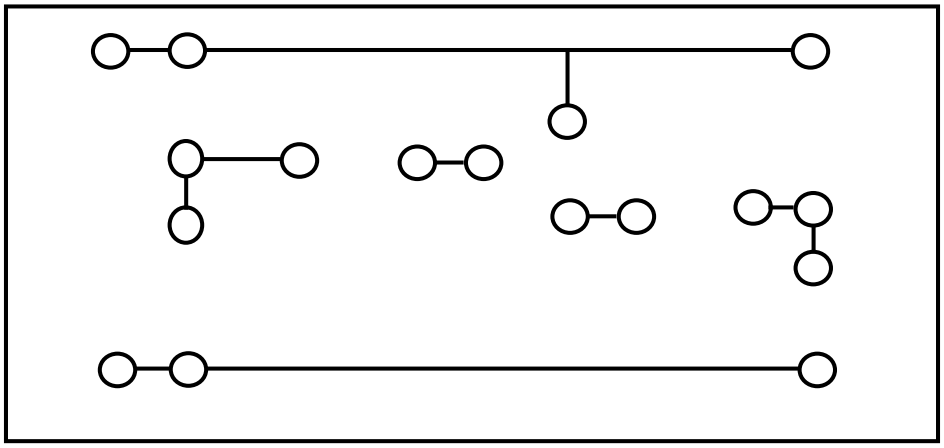

Fig. 22

(i) Use the abbreviations and symbols on the circuit diagram to show where each component is positioned on the p.c.b. [6]

(ii) Clearly label the +9V and 0V terminals on the p.c.b. [2]

(iii) State the purpose of a light dependent resistor (LDR).

.....

..... [2]

(iv) Name the source that energise the LDR.

..... [1]

(v) Identify the electronic device labelled **A** in Fig. 21.

..... [1]

(vi) List **two** functions of device **A** in Fig. 21.

1 .....

.....

2 .....

..... [2]

[30]

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