Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Applied, 2008

Vocational Specialism – Engineering
(240 marks)

Monday 9th June, 2008

Morning 9:30 – 11:00

General Directions to Candidates

1. Write your **examination number** in this space.
2. Answer **all** questions from Section 1.
3. Answer **any three** questions from Section 2.
4. Write your answers in the spaces provided and include sketches as appropriate.
5. Hand up this paper at the end of the examination.
6. If Question 7 is attempted, answer **any two** topics.

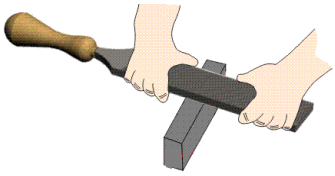
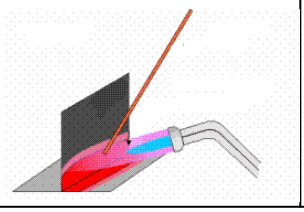
For the Superintendent only	*For the Examiner only*	
Centre Stamp	1. Total of end of page totals	
	2. Aggregate total of all disallowed questions	
	3. Total mark awarded (1 minus 2)	
	4. Bonus mark for answering through Irish (if applicable)	
	5. Total mark awarded if Irish Bonus (3 plus 4)	
	Note: The mark in row 3 (or row 5 if Irish bonus is awarded) must equal the total mark on the flap at the end of the script.	

Section 1 (90 Marks)

Answer **all three** questions

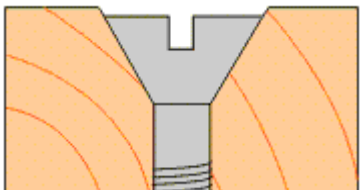
Section 1 **Q1.** **45 marks**

Give brief answers to **any fifteen** of the following:
(sketches may be used to explain your answers)

QUESTION	ANSWER
(a) Name and state the purpose of the filing technique shown here. 	Name of technique_____ Purpose _____
(b) Identify the hand tool shown and state a suitable use for it. 	Name_____ Suitable use _____
(c) State **one** application for the joining process shown below. 	Application_____
(d) Identify the tool shown and state a suitable use for it. 	Tool_____ Use _____
(e) Name **one** joining process shown in the structure of the bridge below and suggest a reason for its use. 	Name _____ Reason _____

QUESTION	ANSWER

(f) Name the screw shown and state where it may be used.

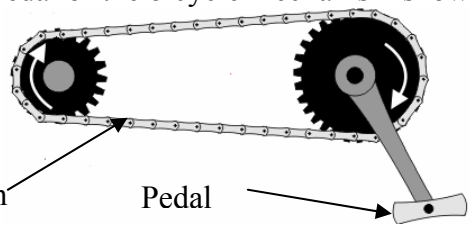


Name _____

Use _____

_____

(g) Suggest suitable materials for the chain and pedal of the bicycle mechanism shown.



Suitable material for chain

_____

Suitable material for pedal

_____

(h) Tick the correct box to indicate the two main metals used to make solder.

Lead + Iron ☐

Tin + Silver ☐

Tin + Lead ☐

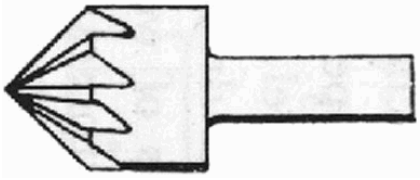
(i) State **one** safety precaution to be observed when using an electric jigsaw, as shown.

Safety precaution _____

_____

_____

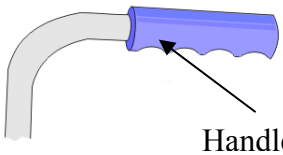
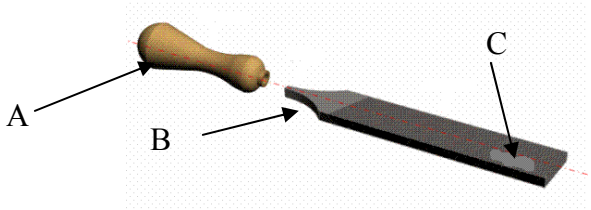
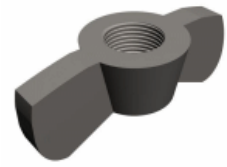
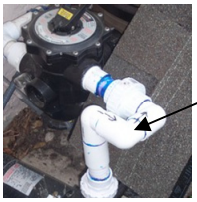
(j) Name the tool shown and state its use.

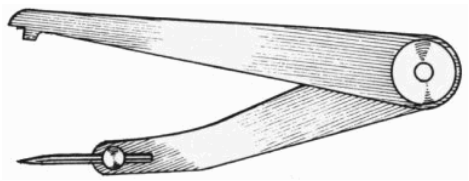
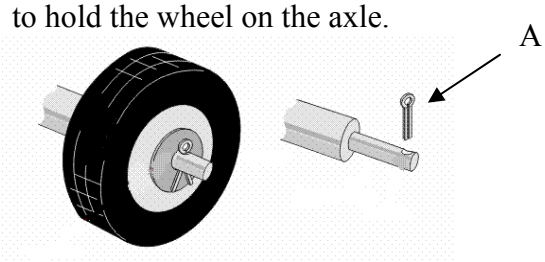


Name _____

Use _____

_____

QUESTION	ANSWER
(k) Name a suitable material used to make the handle of the trolley shown, and give **one** reason for your choice of material. 	Material _____ Reason _____ _____
(l) State **one** safety precaution that must be observed when using the tool shown. 	Safety Precaution_____ _____ _____
(m) Name **any two** parts of the hand file shown. 	A _____ B _____ C _____
(n) Identify the nut shown and state a suitable use for it. 	Name _____ Use_____ _____
(o) Suggest a suitable material for the pipe shown below. 	Material for Pipe _____ _____ _____

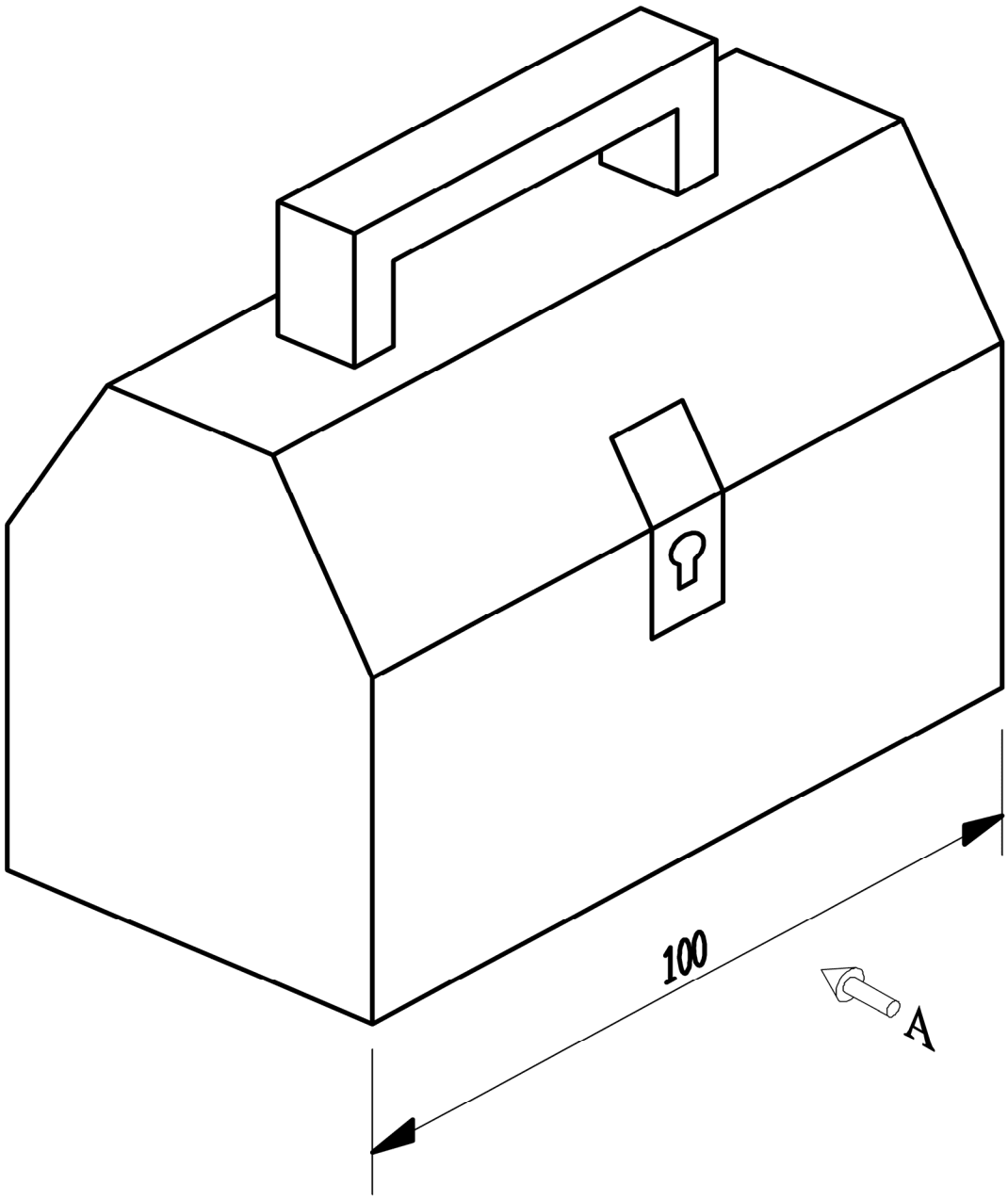
QUESTION	ANSWER
(p) What is the purpose of the oddleg callipers shown here? 	Purpose_____
(q) Name the item marked 'A' which is used to hold the wheel on the axle. 	Name_____
(r) What does this safety symbol indicate and where would it be used? 	Symbol indicates_____ Used_____
(s) Identify the tool shown and state a suitable use for it. 	Name _____ Use _____
(t) Name the tool shown and give a use for it in the engineering room. 	Name _____ Use _____

A pictorial view of a tool box is shown below.
Draw the following **two** views of the tool box on the grid paper opposite:

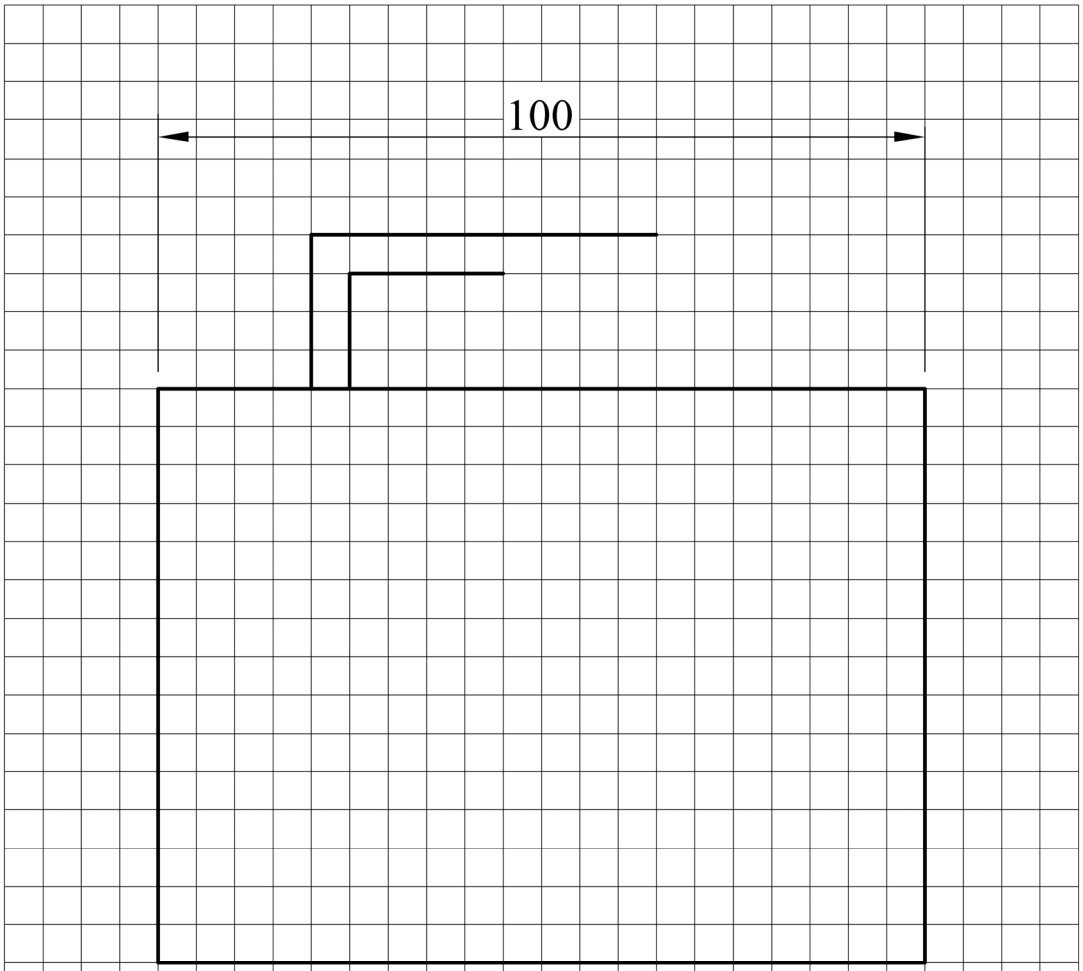
(a) A front elevation in the direction of arrow 'A'.

(b) A plan projected from view **(a)**.

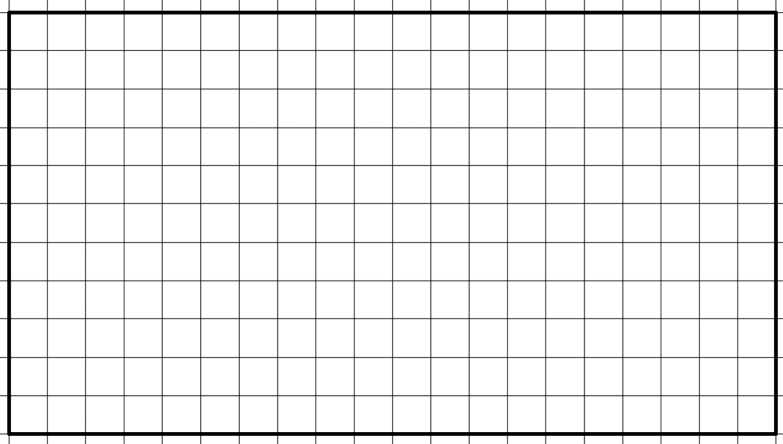
(c) One dimension is shown on the pictorial view. Insert **three** other dimensions on your drawing in the grid paper opposite.



Note: Each grid square is 5 mm long



Complete the Elevation



Complete the Plan

(a) Name the **two** engineering processes shown below and state **one** example of a good safety precaution being observed in **each** case.

A 

B 

Name of engineering process	Safety precaution
A _____ _____ _____	_____ _____ _____
B _____ _____ _____	_____ _____ _____

(b) The diagram shows an operator using a chisel in the workshop without regard to safety. State **two** safety precautions that should be observed when using a chisel.

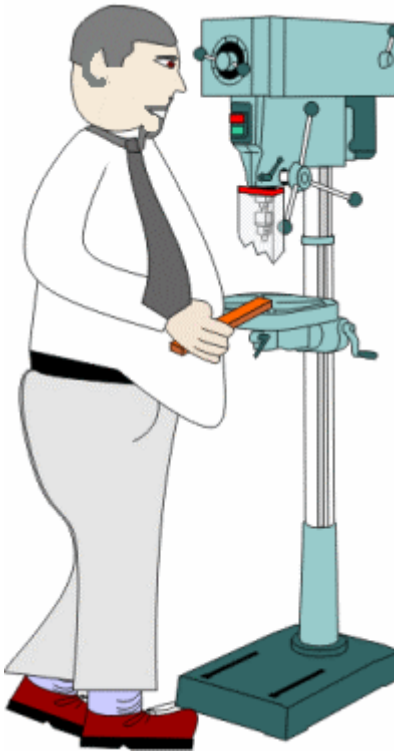
Safety Precaution 1_____

_____

Safety Precaution 2_____

_____

(c) Describe **any two** safety precautions that should be observed by the operator using the drilling machine shown.



Safety Precaution 1 _____

_____

_____

_____

_____

Safety Precaution 2 _____

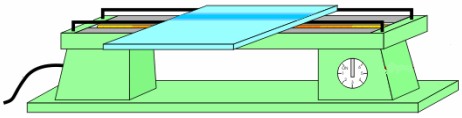
_____

_____

_____

_____

(d) State **one** safety precaution that should be observed when using the strip heater shown to bend plastics.



_____

_____

(e) The safety symbols below may be found in an engineering workshop. Give a brief explanation for **each** of the symbols shown.

A

Symbol A_____

_____

B

Symbol B_____

_____

Section 2 (150 Marks)

Answer **any three** questions

Section 2 **Q4.** **50 marks**

(a) Design, in the spaces provided, a suitable support bracket(s) to enable the ladder shown to be mounted on a concrete garage wall for storage.

The design should clearly show **each** of the following:

(i) A method for securing the bracket(s) to a concrete garage wall;

(ii) How the bracket(s) support(s) the ladder.

Draw in **Grid A** sketches of **different ideas** you considered for the ladder support bracket(s).

Draw in **Grid B** a sketch of the **final solution** for the ladder support bracket(s).

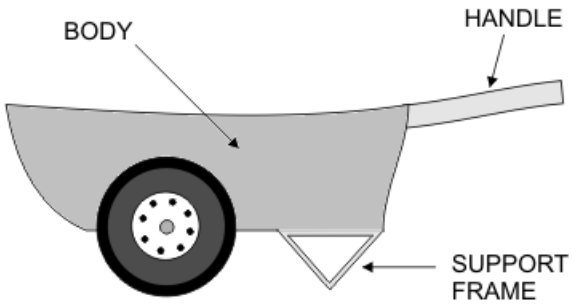
Different ideas for the ladder support bracket(s) should be drawn below in Grid A.

Grid A - IDEAS

A sketch of the **final solution** for the ladder support bracket(s) should be drawn below in Grid B.

Grid B - FINAL SOLUTION

(b) The wheelbarrow below is designed for work in the garden.



(i) Suggest a suitable material for manufacturing the body of the wheelbarrow.

_____

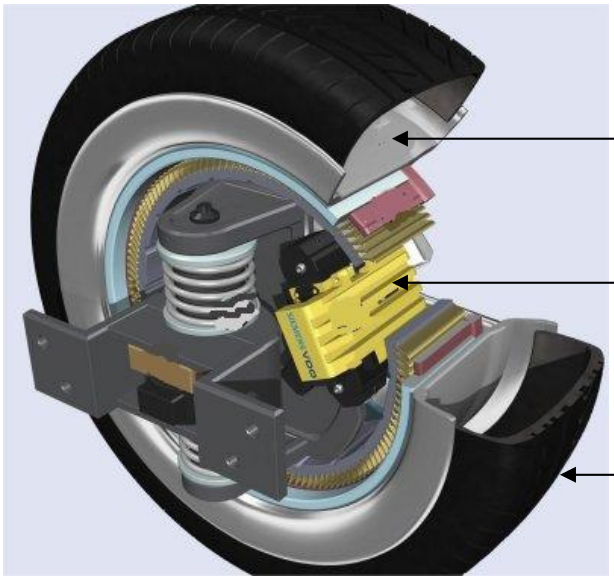
(ii) Give a reason for your choice of material.

_____

(iii) Based on your choice of material, explain how the support frame could be attached to the body of the wheelbarrow.

_____

(a) A cross sectional diagram of a wheel of a car is shown below.
Identify and describe the function of the **three** parts, labelled A, B and C.



(i) Name of Part A_____

Function of Part A _____

_____

(ii) Name of Part B_____

Function of Part B _____

_____

(iii) Name of Part C_____

Function of Part C_____

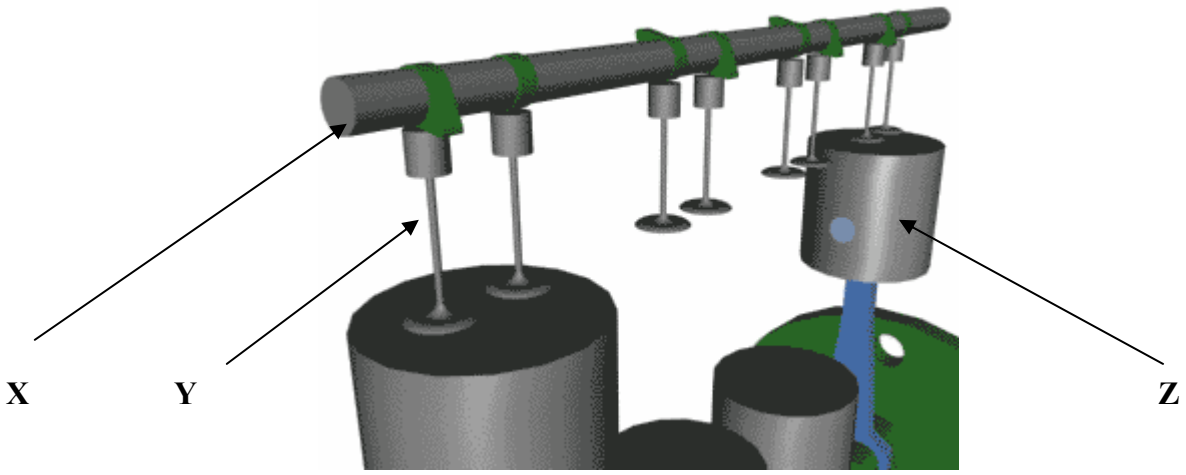
_____

(b) State **one** possible reason why the car engine below has overheated.

Reason_____

_____

(c) Three common components used in a motor car engine are labelled X, Y and Z. Identify the **three** components and explain the function of **each**.



Part	Name of Component	Function
X		
Y		
Z		

Section 2 **Q6.** **50 marks**

(a) Describe briefly, in the spaces below, **any four** stages used to produce the decorative scroll shown.

(Use sketches as appropriate).

Stage 1 _____

_____

_____

Stage 2 _____

_____

_____

Stage 3 _____

_____

_____

Stage 4 _____

_____

_____

(b) Describe briefly **any four** stages used to enamel the piece shown in figure 'A' **using heat**. The piece is made from a flat piece of copper of dimensions 50 mm x 50 mm x 1 mm.
(Use sketches as appropriate - some pictures are shown in figures 'B' and 'C' to help).

Figure A

Figure B

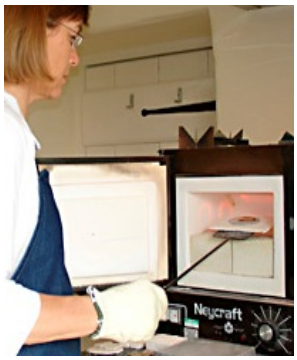


Figure C

Stage 1 _____

_____

_____

Stage 2 _____

_____

_____

Stage 3 _____

_____

_____

Stage 4 _____

_____

_____

(c) State **two** safety precautions to be observed during the enamelling process.

Precaution 1 _____

_____

Precaution 2 _____

_____

Systems Module

(**Any two** topics comprise a full module)

Answer **any two** from the following five topics.

Topic (a) – Computer Aided Design (CAD)

Topic (b) – Electricity

Topic (c) – Electronics

Topic (d) – Mechanisms

Topic (e) – Pneumatics

(a) A CAD drawing of a key ring is shown below. List any **four** CAD commands necessary to produce the drawing.

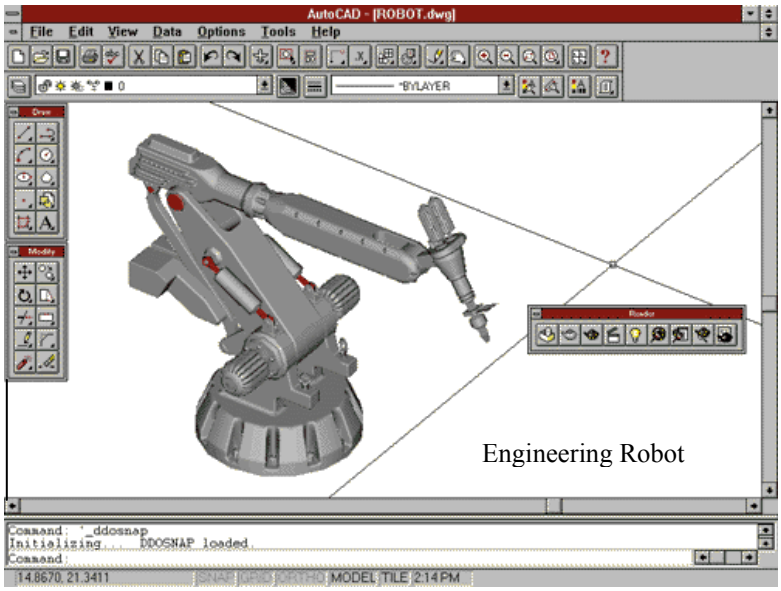
Command 1_____

Command 2_____

Command 3_____

Command 4_____

(b) The drawing of the engineering robot shown below is produced by a CAD package. Explain the procedure involved in inserting text on a CAD drawing.



Engineering Robot

Procedure_____

_____

_____

(a) A generator is shown opposite.
Explain briefly how the generator works.

Explanation _____

_____

_____

(b) Name **any four** of the components shown below, and state a suitable use for **each**.

Name _____

Use _____

_____

Name _____

Use _____

_____

Name _____

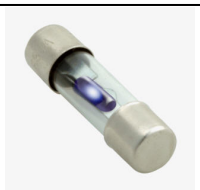
Use _____

_____

Name _____

Use _____

_____



Name _____

Use _____

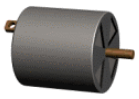
_____

Name _____

Use _____

_____

(a) Name the **three** components shown and give a suitable use for **each**.



Name _____

Use _____

_____

Name _____

Use _____

_____

Name _____

Use _____

_____

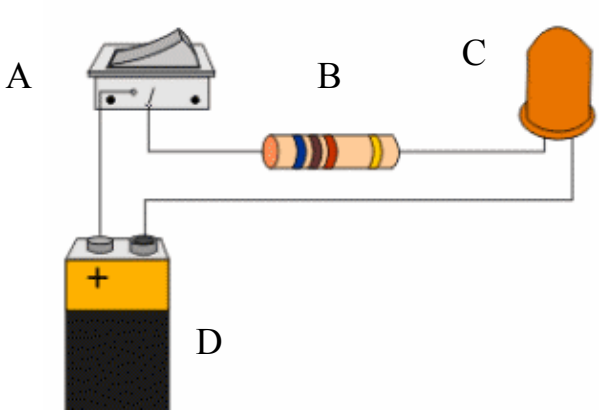
(b) Identify the instrument shown and explain its use in electronics.

Name _____

Use _____

_____

(c) Identify **each** of the electronic components shown and write your answers in the table provided.



	Name of Electronic Component
A	
B	
C	
D	

(d) Explain how the circuit above works.

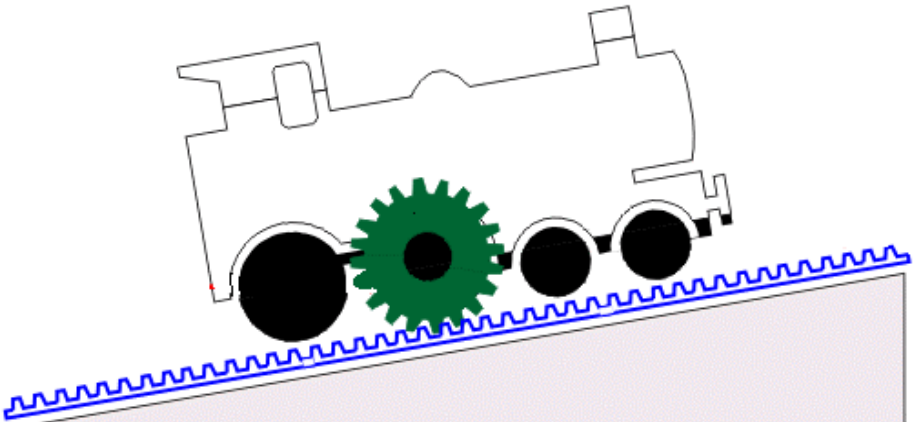
_____

_____

_____

_____

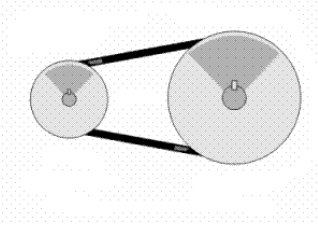
(a) The diagram below shows a train and a mechanism to help it to travel up the hill. Explain how the mechanism works.

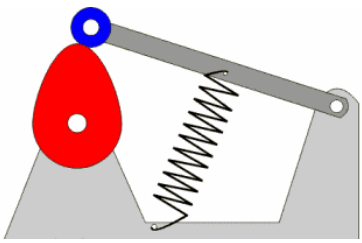


Explanation_____

_____

(b) Identify the **three** mechanisms 'A', 'B' and 'C' shown below and state **one** use of each.

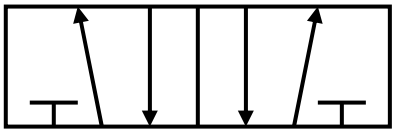
A 

B 

C 

	Name	Use
Mechanism A		
Mechanism B		
Mechanism C		

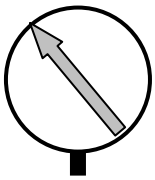
(a) Name any **three** of the components shown and give a suitable use for **each**.



Name _____

Use _____

_____



Name _____

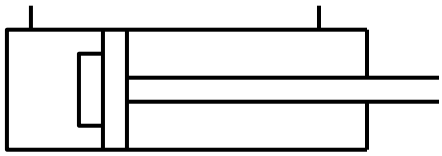
Use _____

_____

Name _____

Use _____

_____

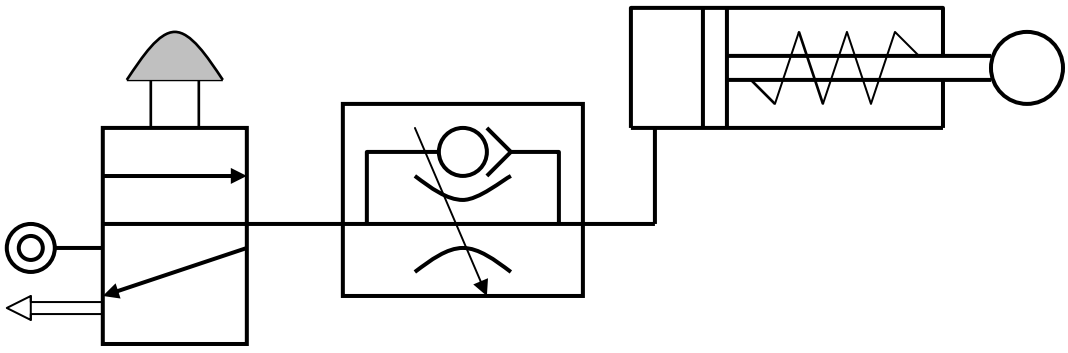


Name _____

Use _____

_____

(b) Explain how the pneumatic circuit below works.



Explanation

_____

_____

_____

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For Examiners use only		
Question	**Mark**	**Total**
Section 1		
1		
2		
3		
Section 2		
4		
5		
6		
7 (a)		
7 (b)		
7 (c)		
7 (d)		
7 (e)		
Total		