Design & Technology
A-Level

Moulding
Multiple Choice

Materials required for questions

- Pencil
- Rubber
- Calculator

Instructions

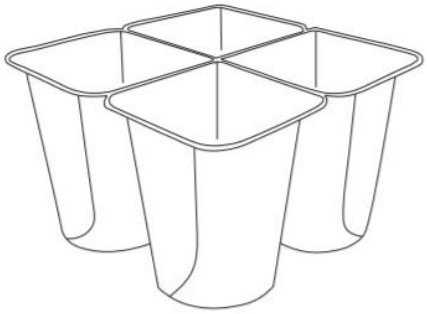
- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary
- Use a cross in the box to mark you answer 

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
- Don’t spend too much time on one question

Good luck!

Q1. Which one of the following processes would be used to manufacture yoghurt pots? – edexcel 2018



A Injection moulding ☐

B Vacuum forming ☐

C Blow moulding ☐

Q2. Which one of the following processes would be used to manufacture continuous lengths of plastic pipe? – edexcel 2017

A Extrusion ☐

B Injection moulding ☐

C Blow moulding ☐

Q3. Which process would have been used to make the metal frame of the g-clamp shown below? – edexcel -2015

A Injection moudling ☐

B Casting ☐

C Blow moulding ☐

Q4. Which one of the following processes is best suited to manufacture a hollow shampoo bottle? – edexcel 2014

A Vacuum forming ☐

B Blow moulding ☐

C Extrusion ☐

Q5. Which one of the following processes involves the use of heat? – edexcel 2013

A Laminating ☐

B Pop riveting ☐

C Vacuum forming ☐

Q6. When injection moulding, how is the polymer moved along the heating chamber? - bitesize

A By a belt ☐

B By the heater ☐

C By an Archimedean screw ☐

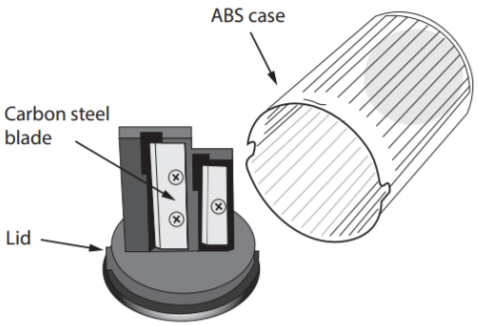
Q7. What is a former? - bitesize

A	A rigid shape that is used so other materials take its form	☐
B	A hollow cavity where molten material can be formed	☐
C	A hollow shape produced on a vacuum former	☐

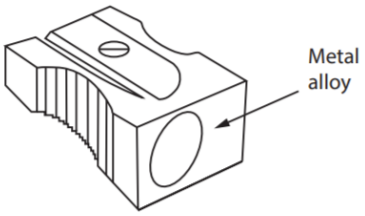
Q8. Which of the following is the process called injection moulding? – tech student aqa paper 4

A	Plastic coating of a metal surface, to increase its resistance to temperature	☐
B	A process involving heating plastic granules to liquid form and forcing the solution into a mould	☐
C	A process that creates a reflective coating on a range of polymers	☐

Q9. The images below show 2 different types of pencil sharpener Evaluate pencil sharpener A in comparison to pencil sharpener B in terms of from, materials and components. **(6 marks) – edexcel 2018**

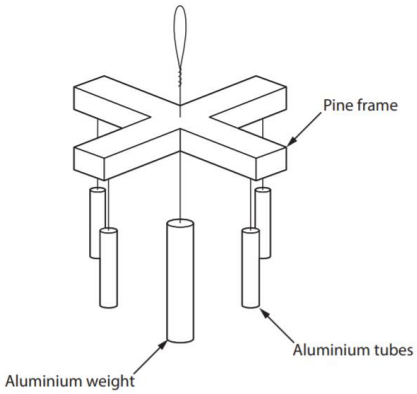


Pencil sharpener A



Pencil sharpener B

Q10. The drawing below shows a wind chime. It hangs from a tree in the garden and makes a gentle noise when blown in the wind. **(2 marks)** – edexcel 2017

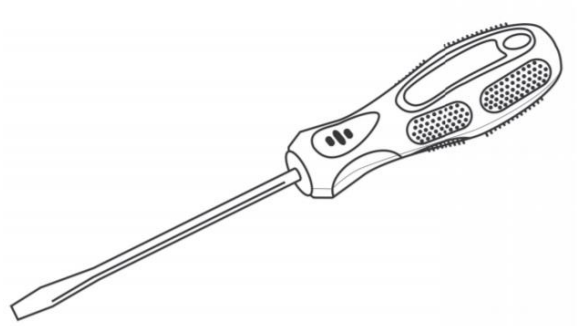


Give two properties of aluminium that make it suitable for the weight.

1.

2.

Q11. The drawing below shows a screwdriver.



Give 2 properties of polyethene that make it suitable for the screwdriver handle.
For each property justify you answer. **(4 marks) – edexcel 2015**

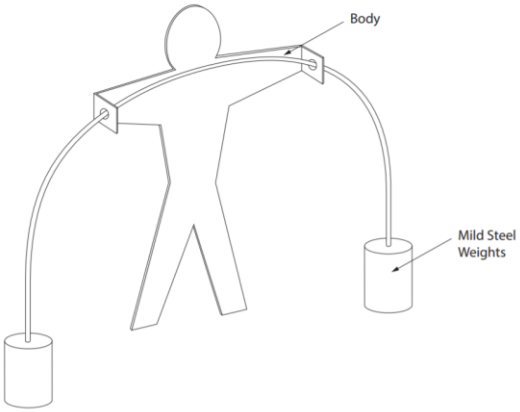
Property 1:

Justification:

Property 2:

Justification:

Q12. A body of the balancing figure could be made from acrylic or aluminium.



Give three advantages of making the body out of acrylic rather than

aluminium. **(3 marks) – edexcel 2014**

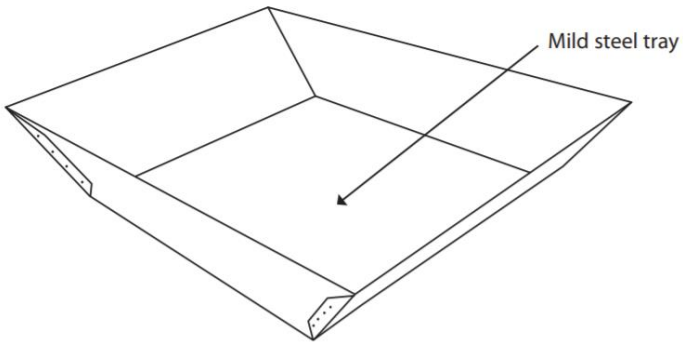
1.

2.

3.

Q13. Thermochromic pigments have many innovative applications.

The wheelbarrow tray is made from mild steel



Explain 2 advantages of making the wheel barrow tray from mild steel **(4 marks) – edexcel 2013**

1.

2.

Q14a. The shaped blocks shown below are made from polyvinyl chloride (PVC).
Give two properties of PVC that make it suitable for the shaped blocks. Justify your answer for each property **(4 marks) -edexcel 2013**

Property 1:

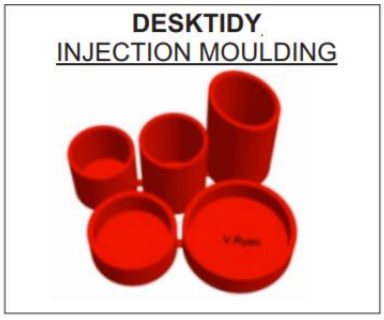
Justification:

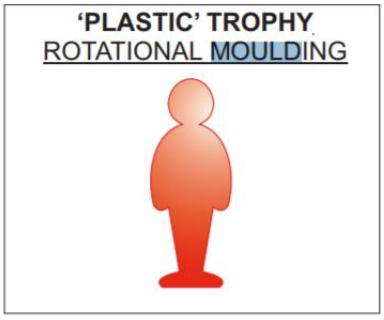
Property 2:

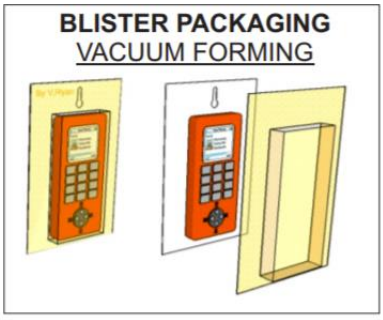
Justification:

14b. The shaped blocks are hollow. Name one process that could be used to make the hollow shaped blocks. **(1 mark)**

Q15. Select on o the products shown below. Then describe 2 reasons for it being suitable for manufacture in large numbers/mass production. **(4 marks) – tech student aqa paper 2**







Product: _____

Reason 1: _____

_____

_____

Reason 2: _____

_____

_____

Answers

Q1. B
Q2. A
Q3. B
Q4. B
Q5. C
Q6. C
Q7. A
Q8. B

Q9.
Evaluation to address following issues:

Why is product shaped/styled the way it is?

Pencil sharpener A:

- Big to hold and collect waste
- Able to be taken apart easily so as to be able to empty the ABS case
- Textured ribs moulded into the case
- Two different sized holes to enable different sized diameter pencils to be sharpened
- Bigger and takes up more space

Pencil sharpener B:

- Textured grip on the side to make it easier to hold
- Clear space around the top by the blade to allow shavings to be removed as they come off the pencil
- Has finger and thumb recesses to enable a secure grip
- Tapered shape follows the form of the conical pencil tip
- Smaller than A but likely to get lost

Materials and components

Pencil sharpener A:

- Could have a clear / transparent waste collection unit so as to see when it is full
- Blades that can be replaced when they are blunt
- Injection moulded components can be coloured at the manufacturing stage
- Multiple materials
- ABS case prone to cracking

Pencil sharpener B:

- Low melting alloy for die casting
- Fine detail moulded into product as a result of material and process
- Replaceable blade
- Self-finishing as a result of the process used
- Single material
- Robust / unlikely to break

Q10.

Two properties given from:

- Excellent resistance to corrosion/oxidises to protect/water resistant/does not rust (1)
- Light/lightweight (1)
- Durable (1)
- Maintains/keeps high shine/lustre (1)
- Free cutting/good machinability (1)
- Fluidity/Can be extruded (1)

2 x 1

Q11.

Two properties given and linked justification from:
Property: Tough (1)
Justification: It can withstand knocks / being dropped / hit with hammer (1)

Property: Electrical insulator (1)
Justification: It will protect from electric shocks (1)

Property: Plasticity (1)
Justification: It can be injection moulded / easily moulded (1)

Property: Lightweight (1)
Justification: So it can be used for long periods without causing injury / RSI (1)

Property: Resistant to chemicals (1)
Justification: Will not be effected by any liquids / fluids / paints / white spirit (1)

2 x 1
2 x 1

Q12.
Two advantages given from:
• No surface finishing required (1)
• Acrylic is available in a range of colours (1)
• Acrylic is lighter (1)
• Easily cut on a laser (1)
• Acrylic is easily heated and bent into shape/ moulded/ formed (1)
(Do not accept cheaper or anything related to recycling)
3 x 1

Q13.

Two advantages explained from:
• No expensive mould/machine is required (1) which means that it will be cheaper (1)
• Easy to recycle (1) which means less likely to be thrown away/added to landfill (1)

• Easy to make different shapes and sizes (1) because there is no mould (1)
• Bits can be pressed/stamped out (1) and then joined easily by welding/riveting (1)
• Mild steel is tough (1) which means it can withstand knocks / bumps(1)
• Mild steel is hard (1) which means it can withstand wear (1)
• Easily welded (1) can be repaired/patched up (1)
• High compressive strength (1) makes is capable of taking/carrying weight
(1)
• Relatively cheap (1) keeps material costs down (1)
• Widely/readily available (1) making is easy to get (1)
• Malleable (1) which means it can be pressed/folded into shape (1)

Do not accept 'Strong' or 'Durable'.
2 x 1
2 x 1

Q14a.

Property
• Durable (1)
Justification
• Means they can be left outside and will not fade/discolour in the sunlight (1)
Property
• Waterproof (1)
Justification
• Means they can be left outside and will not absorb water/ can be put in a child's mouth/can be wiped clean (1)
Property
• Tough/impact resistant (1)
Justification
• Means they can withstand knocks and bumps when being used (1)
Property
• Lightweight (1)
Justification

• Means they are not too heavy for children to play with/will not hurt them if they drop it (1)

Property

• Good chemical resistance (1)

Justification

• Means they can be washed with detergents (1)

Property

• Plasticity (1)

Justification

• Means it can be moulded/blown into shape (1)

Justification must be focused on the product rather than generic qualities.

2 x 1

2 x 1

14b.

Any named process from:

• Blow moulding (1)

• Rotational moulding (1)

Q15.

Desktidy

- Steel mould made with good accuracy can be reused thousands of times
- Continuous process, granules constantly fed into hopper, screw thread turns to move granules along tube until it is molten, then it cools inside mould
- Once cooled, the mould can be opened and the desktidy can be taken out and process repeated

Plastic trophy

- Ideal for hollow products
- Suitable for manufacture of batches from 100 to 5000 units
- Investment in equipment and tooling is less than vacuum forming and blow moulding when manufacturing 100+ units

Blister packaging

- Moulding for thin plastic
- Is a skilled job, otherwise mould will show up after forming
- Same mould can be used 100s or 1000s of times to produce same part