Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2024

Marking Scheme

Engineering

Ordinary Level

Note to teachers and students on the use of published marking schemes

Marking schemes published by the State Examinations Commission are not intended to be standalone documents. They are an essential resource for examiners who receive training in the correct interpretation and application of the scheme. This training involves, among other things, marking samples of student work and discussing the marks awarded, so as to clarify the correct application of the scheme. The work of examiners is subsequently monitored by Advising Examiners to ensure consistent and accurate application of the marking scheme. This process is overseen by the Chief Examiner, usually assisted by a Chief Advising Examiner. The Chief Examiner is the final authority regarding whether or not the marking scheme has been correctly applied to any piece of candidate work.

Marking schemes are working documents. While a draft marking scheme is prepared in advance of the examination, the scheme is not finalised until examiners have applied it to candidates' work and the feedback from all examiners has been collated and considered in light of the full range of responses of candidates, the overall level of difficulty of the examination and the need to maintain consistency in standards from year to year. This published document contains the finalised scheme, as it was applied to all candidates' work.

In the case of marking schemes that include model solutions or answers, it should be noted that these are not intended to be exhaustive. Variations and alternatives may also be acceptable. Examiners must consider all answers on their merits, and will have consulted with their Advising Examiners when in doubt.

Future Marking Schemes

Assumptions about future marking schemes on the basis of past schemes should be avoided. While the underlying assessment principles remain the same, the details of the marking of a particular type of question may change in the context of the contribution of that question to the overall examination in a given year. The Chief Examiner in any given year has the responsibility to determine how best to ensure the fair and accurate assessment of candidates' work and to ensure consistency in the standard of the assessment from year to year. Accordingly, aspects of the structure, detail and application of the marking scheme for a particular examination are subject to change from one year to the next without notice.

LEAVING CERTIFICATE, 2024

Marking Scheme

Written Examination and Practical Examination

ENGINEERING –
Materials and Technology

ORDINARY LEVEL

Introduction – written examination

In considering the marking scheme, the following should be noted.

1. The solutions presented are examples only. All other valid solutions are acceptable and are marked accordingly.

2. The detail required in any answer is determined by the context and the manner in which the question is asked, and by the number of marks assigned to the answer in the examination paper and, in any instance, therefore, may vary from year to year.

3. Bonus marks at the rate of 5% of the marks obtained will be given to a candidate who answers entirely through Irish and who obtains less than 75% of the total marks. In calculating the bonus to be applied decimals are always rounded down, not up e.g., 4.5 becomes 4; 4.9 becomes 4, etc. The bonus table given on the next page applies to candidates who answer entirely through Irish and who obtain more than 75% of the total marks.

4. The table below contains information about annotations used for marking throughout the exam paper.

Annotation	Meaning
	Blank page
	Page marked by examiner

Coimisiún na Scrúduithe Stáit

Marcanna Breise as ucht freagairt trí Ghaeilge

Léiríonn an tábla thíos an méid marcanna breise ba chóir a bhronnadh ar iarrthóirí a ghnóthaíonn níos mó ná 75% d'iomlán na marcanna.

N.B. Ba chóir marcanna de réir an ghnáthráta a bhronnadh ar iarrthóirí nach ngnóthaíonn níos mó ná 75% d'iomlán na marcanna don scrúdú. Ba chóir freisin an marc bónais sin **a shlánú síos**.

Tábla 200 @ 5%

Bain úsáid as an tábla seo i gcás na n-ábhar a bhfuil 200 marc san iomlán ag gabháil leo agus inarb é 5% gnáthráta an bhónais.

Bain úsáid as an ngnáthráta i gcás 150 marc agus faoina bhun sin. Os cionn an mharc sin, féach an tábla thíos.

Bunmharc	Marc Bónais
151 - 153	7
154 - 160	6
161 - 166	5
167 - 173	4

Bunmharc	Marc Bónais
174 - 180	3
181 - 186	2
187 - 193	1
194 - 200	0

LEAVING CERTIFICATE

ENGINEERING - Materials and Technology

(Ordinary Level – 200 marks)

Written Examination Marking Scheme 2024

Answer any four questions.

Question 1: 50 marks

Any eight parts @ 6 marks each.

Award 1 extra mark for each of the first two correctly answered parts.

Question 2: 50 marks

(a)	Three parts @ 5 marks	**(15)**
(b)	(i) One part @ 6 marks	
	(ii) One part @ 3 marks	
	(iii) One part @ 3 marks	**(12)**
(c)	(i) Three parts @ 3 marks	
	(ii)Three parts @ 2 marks	**(15)**
(d)	(i) One part @ 4 marks	
	(ii) One part @ 4 marks	**(8)**

Question 3: 50 marks

(a)	Any two parts @ 7 marks	**(14)**
(b)	Any two parts @ 7 marks	**(14)**
(c)	Any two parts @ 5 marks	**(10)**
(d)	Two parts @ 6 marks	**(12)**
	OR	
(d)	Three parts @ 4 marks	**(12)**

Question 4: 50 marks

(a)	(i) Two parts @ 3 marks	
	(ii) Two parts @ 3 marks	**(12)**
(b)	Any three parts @ 5 marks	**(15)**
(c)	Any three parts @ 5 marks	**(15)**
(d)	Two parts @ 4 marks	**(8)**

Question 5: 50 marks

(a)	(i) Any three @ 3 marks	
	(ii) One part @ 11 marks	**(20)**
(b)	Any two parts @ 5 marks	**(10)**
(c)	Any two parts @ 5 marks	**(10)**
(d)	Any two parts @ 5 marks	**(10)**

Question 6: 50 marks

(a)	Any three parts @ 5 marks	**(15)**
(b)	Any three parts @ 5 marks	**(15)**
(c)	(i) One part @ 6 marks	
	(ii) One part @ 6 marks	
	(iii) Two parts @ 4 marks	**(20)**
	OR	
(c)	(i) One part @ 6 marks	
	(ii) Any two parts @ 4 marks	
	(iii) Any one part @ 6 marks	**(20)**

Question 7: 50 marks

(a)	(i) Any two parts @ 3 marks	
	(ii) Any one part @ 6	**(12)**
(b)	(i) One part @ 5 marks	
	(ii) One part @ 5 marks	
	(iii) One part @ 5 marks	
	(iv) One part @ 5 marks	**(20)**
(c)	Any three parts @ 6 marks	**(18)**
	OR	
(c)	(i) Any three parts @ 2 marks	
	(ii) Any three parts @ 2 marks	
	(iii) Any one part @ 6 marks	**(18)**

Marking Scheme

Note: The solutions presented are examples only.
All other valid solutions are acceptable and are marked accordingly.

Question 1 (50 Marks)

Any eight parts @ 6 marks each.
Award 1 extra mark for each of the first two question parts answered correctly. (Max: +2 marks)

(a) Identify mechanism A and give one application for it.

- Mechanism **A** is a ratchet and pawl.
- Application, used in a socket wrench / ratchet.

Identification:
Award 3
Application:
Award 3
Total (6) Marks

(b) Explain the term electrical conductor:

- An electrical conductor is a material that will allow electricity to flow through it.

Explanation
Total (6) Marks

(c) State one benefit of making prototypes as part of the design process:

- Making prototypes or models helps to ensure the final design operates as intended.

Benefit:
Total (6) Marks

(d) Give one reason for using cutting fluids when machining:

- Cutting fluids help to control the temperature during the machining process by absorbing heat and preventing damage to the cutting tool and workpiece.

Reason:
Total (6) Marks

(e) State two safety precautions that should be followed when using a metal shears:

- Make sure your hands are a safe distance from the cutting blades.
- Always check, nobody is behind you when you pull down the arm as the arm could hit them.

Precautions:
(Award 3 + 3)
Total (6) Marks

(f) Explain the term metal alloy and name one metal alloy.

- A metal alloy is a metal made of two or more metals mixed together.
- An example of a metal alloy is bronze, a mixture of copper and tin.

Explanation:
Award 3
Example:
Award 3
Total (6) Marks

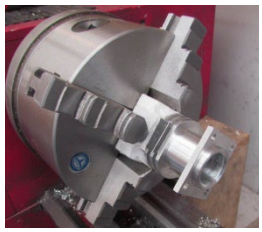
(g) State two properties of aluminium.

- Lightweight
- Malleable

Properties:
(Award 3+3)
Total (6) Marks

(h) Name the type of chuck shown and give one suitable use for it.

- Name: Four jaw independent chuck
- Use: Used for eccentric turning or for gripping square or irregular shapes.



Name:
Award 3 Marks
Use:
Award 3 Marks
Total (6) Marks

(i) Explain the term ferrous metal and give one example of a ferrous metal.

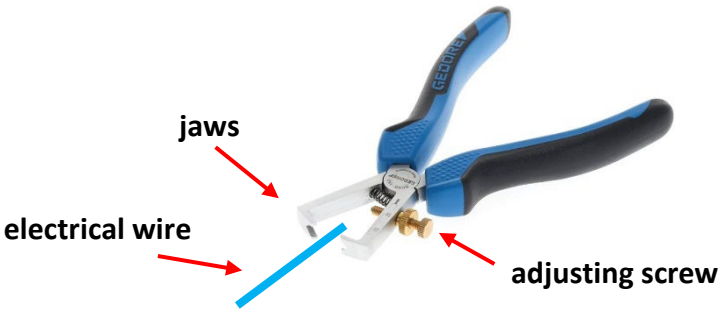
- A ferrous metal is a metal that contains iron.
- An example of a ferrous metal is steel.

Explanation:
Award 3 Marks
Example:
Award 3 Marks
Total (6) Marks

(j) Any one:

(i) Wire stripper:

A wire stripper is a hand tool designed to remove the protective covering from electrical wires. To remove the protective covering, you must open the wire stripper handles and put the wire into the jaws of the wire stripper. Slowly press the handles together until they can go no further. This action will cut through the insulation on the wire. Pull the wire stripper towards the cut end of the wire to remove the insulation. The wire stripper shown has an adjusting screw which is used to stop the jaws closing too far and cutting through the wire.



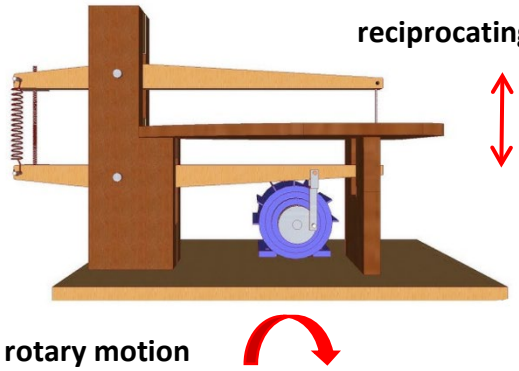
Any one explanation:
Award 6 Marks
Total (6) Marks

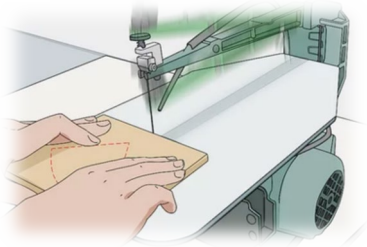
(ii) Knurling tool:

A knurling tool is used on a centre lathe to apply a grip to the surface of a piece i.e. scriber / centre punch. The knurling tool is fitted to the tool post and set at 90^{o} to work. The knurling tool has two opposing rollers which are pressed into the piece and when moved parallel to the axis of the work will produce a diamond pattern on the surface of the material.

(iii) Scroll saw:

A scroll saw includes an electric motor and a crank mechanism. The crank mechanism converts the rotary motion of the motor into reciprocating motion of a thin blade. The up and down motion of the thin blade can be used to cut intricate shapes in wood or metals. A small rubber bellows, fixed to the crank mechanism, is used to produce a small air flow which is directed at the cutting face to remove waste material as it is cut. A guard is attached to the top of the scroll saw arm and should always be used when cutting.





(k) Any one

Any one explanation:
Award 6 Marks
Total (6) Marks

(i) Drone technology:

Drones are unmanned aircrafts. A drone is a flying robot that can be remotely controlled or fly autonomously using software-controlled flight plans that work in conjunction with onboard sensors and a global positioning system (GPS). To fly, drones must have a power source, such as battery or fuel. They also have rotors, propellers and a frame. The frame of a drone is typically made of a lightweight, composite material to reduce weight and increase manoeuvrability.

(ii) Autonomous vehicle

An autonomous vehicle is a vehicle capable of sensing its environment and operating without human involvement. A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all. An autonomous car can go anywhere a traditional car goes and do everything that an experienced human driver does.

Autonomous vehicles for Digital Warehousing

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(iii) Solar energy

Solar energy is light, heat, and other forms of energy given off by the sun. Solar energy can be collected and used to heat buildings and to make electricity.

(I) Define the term brittleness and name one material that is brittle.

- Brittleness is a material's tendency to easily break, crack or snap.
- Glass is a brittle material.

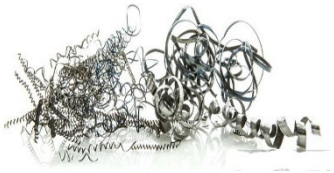
Definition:
Award 3 Marks
Name:
Award 3 Marks
Total (6) Marks

(m) Any one:

Any one explanation:
Award 6 Marks
Total (6) Marks

(i) Swarf

Swarf is the waste material produced when the chip is cut from the workpiece.

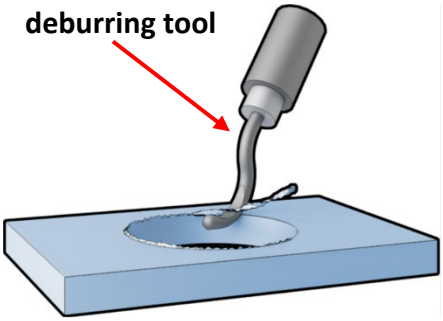


(ii) Taper tap

A taper tap is tapered over the first 8 to 10 threads, allowing it to enter the hole and gradually cut to full thread depth. Used as a starter tap.

(iii) Deburring

Deburring is the removal of excess material from the edges or surfaces of a raw unfinished product. Special deburring tools can be used to assist in achieving this.



Question 2 (50 Marks)

(a)

(i) Blast furnace: Pig iron.

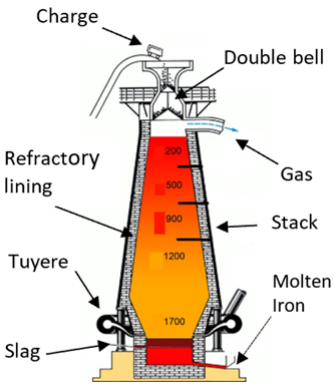
(ii) Cupola furnace: Cast iron

(iii) Electric arc furnace: Steel

Metals
(Award 3 @ 5 Marks)
Total (15) Marks

(b) Any one:

(i) Labelled diagram:



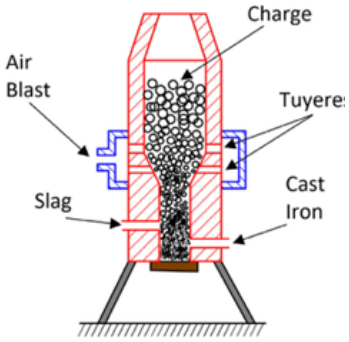
Blast furnace:

(ii) Materials used: -

Iron ore
Coke
Limestone

(iii) Heating the charge: -
The coke is burned to produce heat.

(i) Labelled diagram



Cupola furnace

(ii) Materials used: -

Pig iron
Scrap steel
Carbon
Coke
Limestone

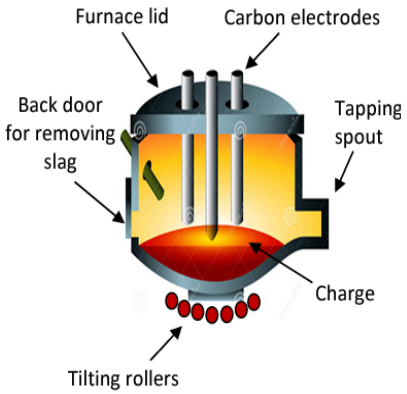
(iii) Heating the charge: -
The coke is burned to produce heat.

(i) Labelled diagram
Award 6 Marks

(ii) Materials used
Award 3 Marks

(iii) Heating the charge
Award 3 Marks
Total (12) Marks

(i) Labelled diagram



Electric arc furnace

(ii) Materials used: -

Scrap iron/steel
Carbon
Limestone

(iii) Heating the charge: -

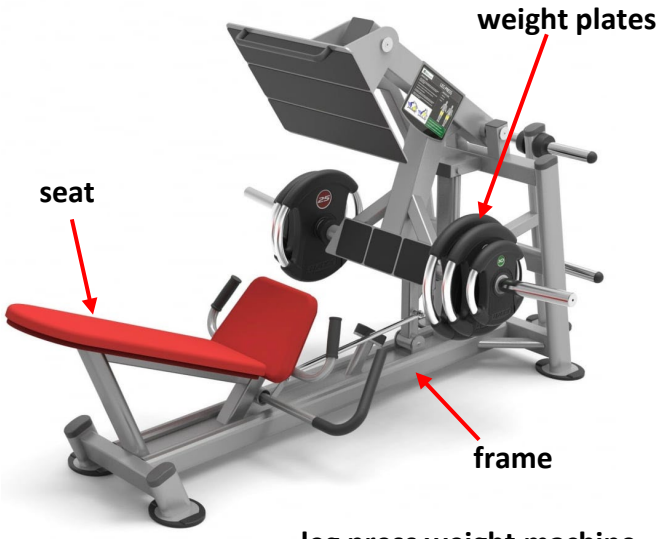
Heat for this furnace is produced by an electric arc created between carbon electrodes and the charge.

(c) Leg press weight machine:

Seat
(i) Material: Vinyl
(ii) Reason: Comfortable and easy to clean.

Frame
(i) Material: Steel tube
(ii) Reason: Light, but strong

Weighted plates
(i) Material: Cast iron
(ii) Reason: Can be poured into a designed shape, heavy metal



leg press weight machine

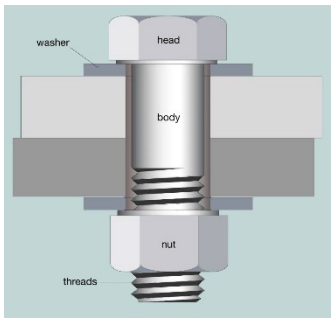
(i) Material
(Award 3 @ 3 Marks)

(ii) Reason
(Award 3 @ 2 Marks)
Total (15) Marks

(d) Temporary joining:

(i) Advantage:
Component parts can be easily dismantled if there is repair work required or new parts to be replaced.

(ii) Temporary joining process:
A suitable temporary joining process for the assembly of the coupling would be the use of nuts and bolts.



(i) Advantage
(Award 1 @ 4 Marks)

(ii) Process
(Award 1 @ 4 Marks)
Total (8) Marks

Question 3 (50 Marks)

(a) Any two:

(i) Normalising:
Normalising steel will reduce its hardness and improve its ductility. Steel is heated to a cherry red colour, approx. 900°C and allowed to cool down at room temperature (faster than annealing).

(ii) Quenching:
Quenching is when a hot metal is cooled very quickly i.e., when a cherry red metal is dipped into cold water and moved about.

(iii) Carbon content:
If iron is mixed with carbon, steel is produced. The amount of carbon (carbon content) mixed with iron, will determine the type of steel produced i.e.

- Low carbon steel contains less than 0.03% of carbon.
- Medium carbon steel contains between 0.03% and 0.06% carbon.
- High carbon steel contains more than 0.06% carbon.

Explanation
(Award 2 @ 7 Marks)
Total (14) Marks

(b) Any two:

(i) Annealing:
Annealing is a heat treatment process used to soften metals. To anneal steel, it is heated to a cherry red colour, approx. 900°C and allowed to cool down as slow as possible. This can be achieved by leaving the metal in a furnace while the furnace is cooling down. Annealing relieves internal stresses, increasing the ductility and malleability of a metal.

(ii) Hardening:
To harden a component made of high carbon steel, it is first heated to a cherry red colour, approx. 800°C / 900°C, or until it loses its magnetic properties. The steel is then immediately quenched in water or oil.

(iii) Tempering:
Tempering removes some of the hardness while increasing the toughness of a metal. It is achieved by heating the metal to a specific temperature which is determined by the colour of the metal. On heating, colours appear and when the correct colour is achieved i.e., light straw appears at approx. 250° - 350°, it is quenched in cold water.

Description
(Award 2 @ 7 Marks)
Total (14) Marks

(c) Two safety precautions

- Wear heat resistant gloves when preforming heat treatment of metals.
- Wear a face shield to protect from hot splashes.

Precautions
(Award 2 @ 5 Marks)
Total (10) Marks

(d) Any two

(i) Elasticity:
The property of elasticity is the ability of an object or material to return to its original shape after being stretched.

(ii) Melting point:
Melting point is the temperature at which a metal changes its state from solid to liquid.

(iii) Compressive strength:
Compressive strength is the ability of a material to withstand heavy loads before failure.

Explain
(Award 2 @ 6 Marks)
Total (12) Marks

OR

(d) Answer all

(i) Robotic lawn mowing:
A robotic lawnmower is autonomous, it can cut the grass at any time during the day or night, it does not need a human to operate it.

(ii) Robotic waste sorting:
Robotic waste sorting can operate continuously, is more efficient. It is also more hygienic as humans do not have to handle contaminated waste products.

(iii) Robotic welding:
Robotic welding can continually produce a much higher level of quality and precision and integrates well with mass production processes.

Advantage
(Award 3 @ 4 Marks)
Total (12) Marks

Question 4 (50 Marks)

(a)

(i) Function of valve A & valve B

- Valve A (blue) is used to turn on and off the flow of oxygen.
- Valve B (red) is used to turn on and off the flow of acetylene.

(ii) Two flames:

- Oxidising flame
- Neutral flame
- Carburising flame

(i) Function of A & B
(Award 2 @ 3 Marks)

(ii) Two flames
(Award 2 @ 3 Marks)
Total (12) Marks

(b) Any three:

(i) Earth clamp:
The earth clamp forms the circuit when welding. It clamps onto the material being welded and when the electrode creates the arc the clamp closes the circuit.

(ii) Welding mask:
The welding mask protects your eyes and face from heat and sparks, as well as ultraviolet and infrared rays emitted by the arc.

(iii) Leather gloves:
Leather gloves are used to protect the user's hands and arms from burns due to molten splatter when welding. They also protect the user from burns when handling hot metals.

(iv) Welding magnet:
Welding magnets are strong magnets that can be used to hold workpieces in place while the workpieces are being welded.

Function
(Award 3 @ 5 Marks)
Total (15) Marks

(c) Any three

Explanation
(Award 3 @ 5 Marks)
Total (15) Marks

(i) Plastic casing.

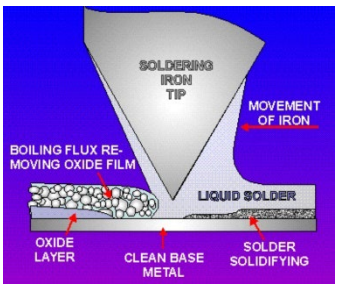
The handle of the electrode holder is typically insulated to protect the welder from electrical shock. The insulation material, often made of heat-resistant plastic or rubber, prevents the welder from coming into direct contact with the conductive parts of the holder.

(ii) Ventilated area.

The chemicals in adhesives can be dangerous especially if they evaporate and form a mist or vapor in the air. Working in a well-ventilated area will help to disperse the vapours reducing the danger of inhaling the chemicals.

(iii) Use of flux.

Flux helps to remove oxide layer which forms on the surface of metals being soldered. The flux increases the wetting ability of the solder, causing it to flow more uniformly over the surfaces being soldered, thus a better more successful joint is achieved.



(iv) Use of a locknut.

Locknuts are used in assembling project work because the nylon insert ensures that they do not loosen due to vibrations.

(d) Safety:

Safety
(Award 2 @ 4 Marks)
Total (8) Marks

Soldering copper pipes and fittings:

- Wear a suitable mask to protect from the fumes produced by the flux.
- Allow all pipes and fittings to cool down before handling.

Question 5 (50 Marks)

(a)

(i) Name a plastic manufacturing process:

Chair – Injection moulding

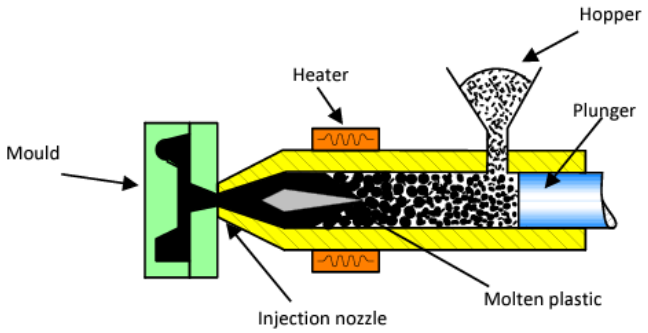
Water bottle – Blow moulding

Toy car – Vacuum forming

(i) Name
(Award 3 @ 3 Marks)

(ii) Describe anyone of the manufacturing process:

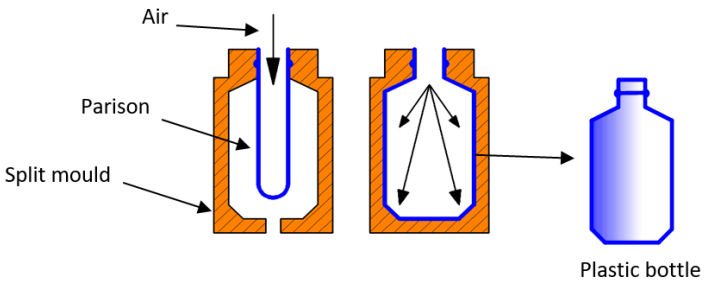
Injection moulding:



Thermoplastic is softened by heating it inside an injection nozzle. The softened plastic is forced by a plunger into a cold mould where it hardens rapidly and is then ejected. Injection moulding is used for the rapid moulding of components.

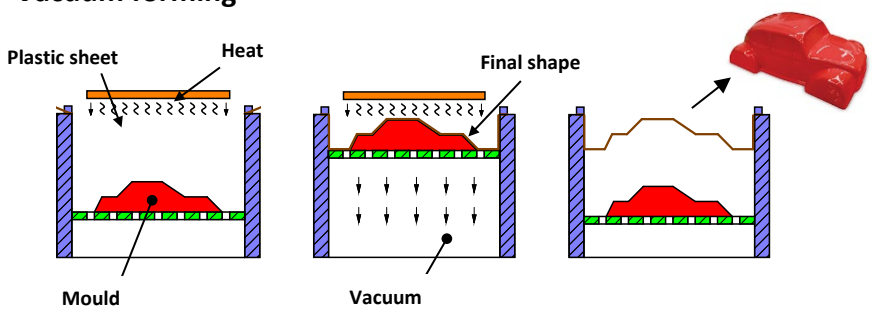
(ii) Description
(Award 1 @ 11 Marks)
Total (20) Marks

Blow Molulding



Used to produce articles from a heated thermoplastic tube called a parison. The mould closes around the extruded parison and air is blow inside forcing the parison out against the wall of the mould. The article is formed by the internal shape of a split mould. The component is allowed to cool before being removed from the opened mould.

Vacuum forming



A vacuum former is a plastic thermoforming machine that is used to produce parts which are precisely formed on one side. The former contains a heating element, a height adjustable table, which is porous, and an air pump. The heating element is used to heat up and soften a sheet of plastic which has been clamped into a frame. When the plastic sheet begins to sag, a mould, placed on the porous table, is lifted into the plastic sheet. The air pump is then turned on creating a vacuum below the mould. This causes the plastic sheet to pull against the mould, forming the final shape. After cooling, the mould is lowered, and the plastic part is removed.

(b) Any two:

(i) Polyvinyl Chloride (PVC) - Water pipes

(ii) Nylon - Gears

(iii) Polystyrene (PS) - Polystyrene foam for packaging

(iv) Acrylonitrile Butadiene Styrene (ABS) - Wall sockets

Product
(Award 2 @ 5 Marks)
Total (10) Marks

(c) Any two

Safety precautions when using a strip heater:

- Do not leave a piece of plastic unattended on the strip heater.
- Remember to turn the strip heater off when finished using it.

Precautions
(Award 2 @ 5 Marks)
Total (10) Marks

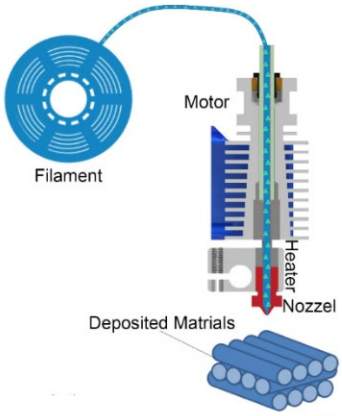
(d) Any two

Description
(Award 2 @ 5 Marks)
Total (10) Marks

(i) Plastic dip coating:
Air is forced through a tank containing powder causing the powder to act like a fluid. Pre-heated items for coating are dipped into the tank. The hot item melts the powder which sticks to its surface. It can then be heated again to provide a fully fused plastic surface.

(ii) Thermosetting plastics:
Thermosetting plastic is a plastic once set, remains hard even when heated again.

(iii) 3D printing:
3D printing is an additive manufacturing process that creates physical objects from a digital design. The process works by extruding thin layers of melted plastic on top of each other. The layers are allowed to fuse and solidify, creating a 3D object.



Question 6 (50 Marks)

(a) Any three:

Lathe processes:

Parallel turning / Facing / Knurling / Drilling / Undercutting / Parting off / Taper turning.

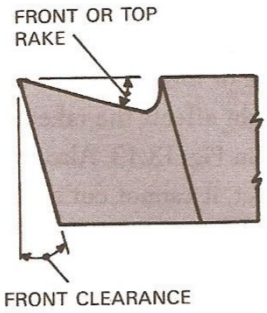
Processes
(Award 3 @ 5 Marks)
Total (15) Marks

(b) Any three:

Explanation
(Award 3 @ 5 Marks)
Total (15) Marks

(i) Rake angle:

The rake angle facilitates the removal of the chip when the cutting tool is in contact with the workpiece.

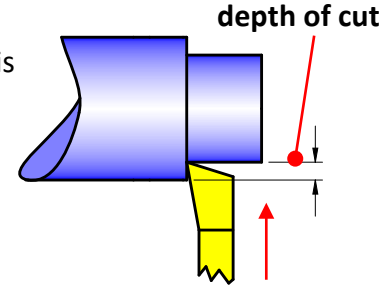


(ii) Chuck key:

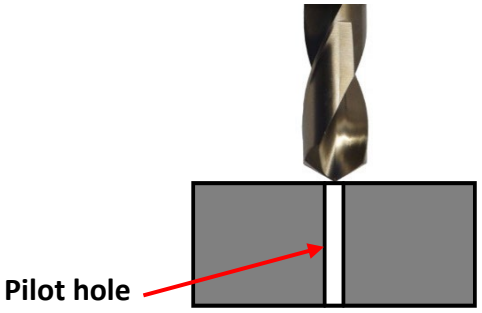
A chuck key is used to open and close drill chucks found on a range of machines such as pillar drills, hand drills or lathe tailstocks.

(iii) Dept of cut:

This is the distance the cutting tool is moved into the workpiece when cutting.



(iv) Pilot hole:
A pilot hole must be drilled before using a large drill. This keeps the large drill central as it guides the drill through the piece when drilling.



(c) Centre lathe part:

(ii) Tailstock

(ii) Drilling / Supporting long work / Reaming / Threading

(iii)

- Wear safety goggles.
- Do not remove swarf using hands.

(i) Name
(Award 1 @ 6 Marks)

(ii) Use
(Award 1 @ 6 Marks)

(iii) Safety precautions
(Award 2 @ 4 Marks)
Total (20) Marks

OR

(c) CNC Laser cutting:

(i) CNC - Computer Numerical Control.

(ii)

- Mass production of complex parts.
- High level of precision accuracy.

(iii) Safety:

- Do not leave a CNC laser machine operating unattended.

(i) CNC
(Award 1 @ 6 Marks)

(ii) Two advantages
(Award 2 @ 4 Marks)

(iii) Safety
(Award 1 @ 6 Marks)
Total (20) Marks

Question 7 (50 Marks)

(a)

(i) Name any two types of fit:
Clearance / Interference / Transition fit

(ii) Description:

- Clearance fit: The shaft is always smaller than the hole.
- Interference fit: The shaft is always larger than the hole.
- Transition fit: The shaft can be larger or smaller than the hole.

(i) Types of fit
(Award 2 @ 3 Marks)

(ii) Description
(Award 1 @ 6 Marks)
Total (12) Marks

(b) Calculations:

(i) Nominal diameter of the hole;	24.00 mm
(ii) Smallest diameter of the shaft;	24.97 mm
(iii) Largest diameter of the hole;	24.05 mm
(iv) Type of fit;	Interference fit

Calculations
(Award 4 @ 5 Marks)
Total (20) Marks

(c) Any three

(i) Vee block & clamp — Used for holding round bars when drilling or marking out.

(ii) Engineering Ruler — Used for accurate measurement, and as a guide for marking out lines on material.

Name
Award 3 @ 3 Marks

Application
Award 3 @ 3 Marks
Total (18) Marks

(iii) Digital vernier callipers

Used for accurately measuring the diameter of round bars or internal diameters of holes. Measurement can be read directly from a digital display.

(iv) Engineering protractor

Use for checking or accurately marking out angles on material.

OR

(c) Answer all

(i) Names:

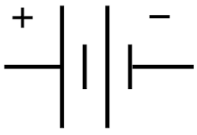
A - Battery

B - Toggle switch

C - L.E.D.

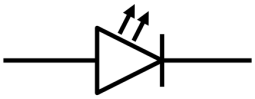
(ii) Electronic symbol:

Battery:



Toggle switch:

L.E.D.:

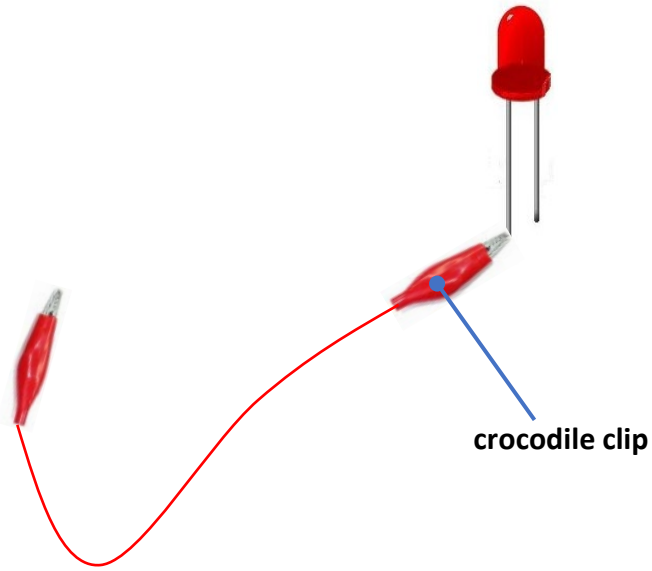


(i) Name
(Award 3 @ 2 Marks)

(ii) symbols
(Award 3 @ 2 Marks)

(iii) Advantage of using crocodile clips

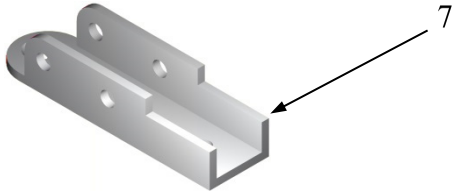
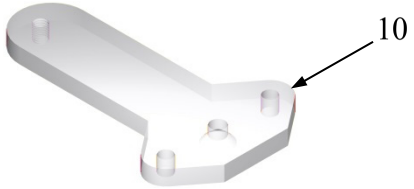
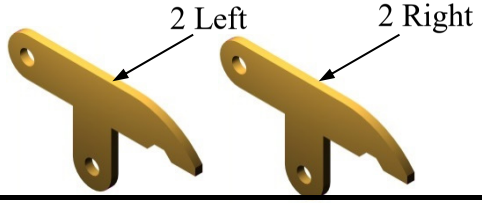
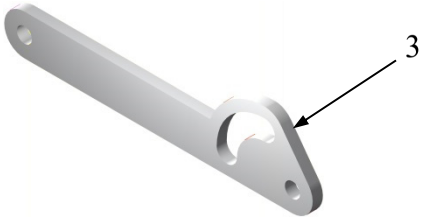
Using crocodile clips helps to design the layout of circuits as components can be interchanged easily without the need for soldering.



(iii) Advantage
(Award 1 @ 6 Marks)
Total (18) Marks

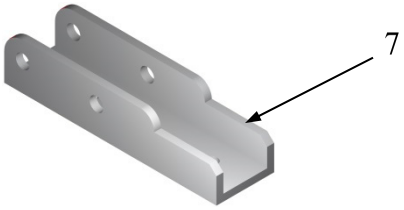
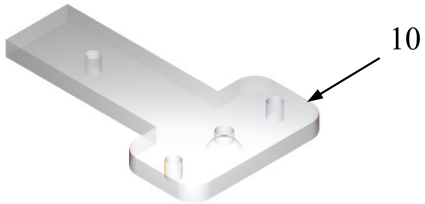
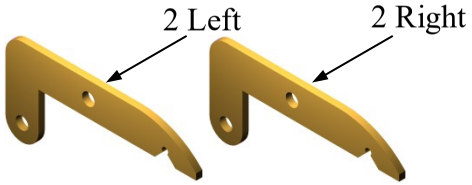
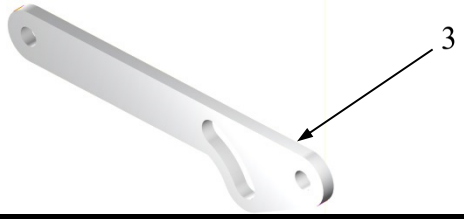
Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Engineering Practical Marking Scheme 2024 Day 1

Section	Part Number	Pictorial Sketch / Description	Concept		Mark	Mark
1	All Parts of Test-piece		Assembly (5) Function (10) Finish (5)		20	20
2	Part 7		Part 7 20 Marks	Marking Out	5	20
				Ø6 & Ø5.5 mm Holes and Ø5.5 CSK Hole	5	
				Stepped Profile and 12.5 mm Radius	5	
				8 mm Radius Profiles and 93 mm Length	5	
3	Part 10		Part 10 10 Marks	Marking Out	5	20
				Ø5.5 Drilled Holes and Ø5.5 CSK Hole	5	
				25 mm Parallel Base and M5 Drill & Tap	5	
				R7 mm Profiles and 93 mm Length	5	
4	Parts 2		Part 2 Right 10 Marks	Marking Out and Ø6 mm Holes	5	20
				External Profile	5	
			Part 2 Left 10 Marks	Marking Out and Ø6 mm Holes	5	
				External Profile	5	
5	Part 3		Part 3 20 Marks	Marking Out and Ø6 mm Holes	5	20
				8 mm Slot	5	
				Curved Profiles	5	
				Straight Profiles	5	

100 Marks (× 1.5 = 150 Total)

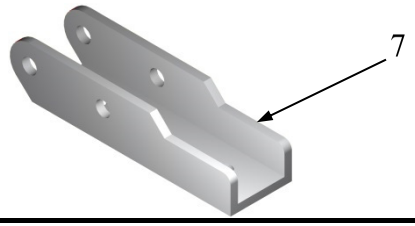
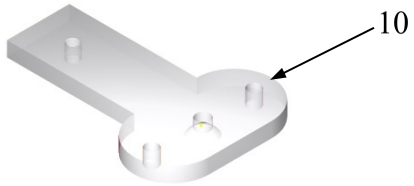
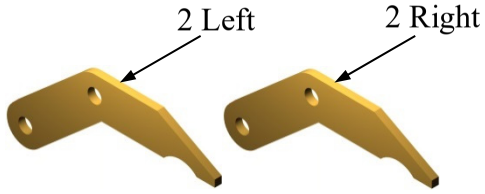
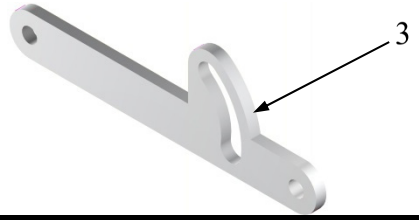
Coimisiún na Scrúduithe Stáit
State Examinations Commission
Leaving Certificate Engineering Practical Marking Scheme 2024 Day 2

Section	Part Number	Pictorial Sketch / Description	Concept		Mark	Mark
1	All Parts of Test-piece		Assembly (5) Function (10) Finish (5)		20	20
2	Part 7		Part 7 20 Marks	Marking Out	5	20
				Ø6 & Ø5.5 mm Holes and Ø5.5 CSK Hole	5	
				Stepped Profile	5	
				8 mm Radius Profiles and 92 mm Length	5	
3	Part 10		Part 10 20 Marks	Marking Out	5	20
				Ø5.5 Drilled Holes and Ø5.5 CSK Hole	5	
				25 mm Parallel Base and M5 Drill & Tap	5	
				R7 mm Profiles and 92 mm Length	5	
4	Parts 2		Part 2 Right 10 Marks	Marking Out and Ø6 mm Holes	5	20
				External Profile	5	
			Part 2 Left 10 Marks	Marking Out and Ø6 mm Holes	5	
				External Profile	5	
5	Part 3		Part 3 20 Marks	Marking Out and Ø6 mm Holes	5	20
				8 mm Slot	5	
				Curved Profiles	5	
				Straight Profiles	5	

100 Marks (× 1.5 = 150 Total)

Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Engineering Practical Marking Scheme 2024 Day 3

Section	Part Number	Pictorial Sketch / Description	Concept		Mark	Mark
1	All Parts of Test-piece		Assembly (5) Function (10) Finish (5)		20	20
2	Part 7		Part 7 20 Marks	Marking Out	5	20
				Ø6 & Ø5.5 mm Holes and Ø5.5 CSK Hole	5	
				Stepped Profile	5	
				8 mm Radius Profile and 81 mm Length	5	
3	Part 10		Part 10 20 Marks	Marking Out	5	20
				Ø5.5 Drilled Holes and Ø5.5 CSK Hole	5	
				25 mm Parallel Base and M5 Drill & Tap	5	
				R15 mm Profiles and 81 mm Length	5	
4	Parts 2		Part 2 Right 10 Marks	Marking Out and Ø6 mm Holes	5	20
				External Profile	5	
			Part 2 Left 10 Marks	Marking Out and Ø6 mm Holes	5	
				External Profile	5	
5	Part 3		Part 3 20 Marks	Marking Out and Ø6 mm Holes	5	20
				8 mm Slot	5	
				Curved Profiles	5	
				Straight Profiles	5	

100 Marks (× 1.5 = 150 Total)

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