



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate 2021

Marking Scheme

Technology

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.



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination, 2021

Technology
Ordinary Level

Marking Scheme

Section A - Core (72 marks)

Instructions:

- (a) Answer **any nine** of the twelve questions in the spaces provided.
All questions in Section A carry 8 marks.

Section A. Answer **any nine** questions. All questions carry 8 marks.

1. *Contactless payment systems* are a popular method of the payment for goods and services.

- (i) Outline **two** benefits for customers who use contactless payment methods when paying for goods or services.

Any two benefits– no need for cash, security, speed, easy-to-use, better customer experience, etc.

- (ii) Give **two** examples of where contactless payment systems are used in everyday life.

Any two applications– grocery shopping, restaurants, fuel filling stations, etc.



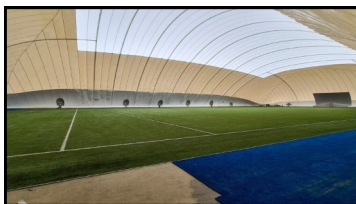
(4+4 marks)

2. The images show the state-of-the-art Connacht GAA air dome, in Beken, Co. Mayo. Recently built, this dome is the largest of its kind in the world and is an example of an air-supported *shell* structure.



- (i) Explain what is meant by the term shell structure.

Typically, a shell structure is a thin, lightweight construction. Its strength is derived through its contour or shape, etc.



- (ii) Suggest **two** ways its design facilitates the playing of Gaelic games all year round.

Any two ways– games are not weather– dependent, large enclosure allows for the flight of a ball to follow its natural trajectory, less maintenance with a synthetic pitch, etc.

(4+4 marks)

3. The images show an *orbital sander* and disposable sanding discs of various *grit size*.

- (i) Give **two** safety precautions that should be observed when using an orbital sander.

Any two safety precautions– wear ear protection, dust mask/ventilation, hold the sander firmly, empty dust bag when full, etc.



- (ii) Briefly outline what 'grit size' refers to in relation to sanding discs.

The grit size indicates the abrasive grade (coarse, medium, fine, etc.) of a sanding disc. For example, a P60 sanding disc is considered to be coarse in nature where as P180 is considered to be fine in nature, etc.

(4+4 marks)

4. The graphics show two safety signs commonly displayed in schools, one colour-coded red and the other colour-coded yellow.

State the meaning of each colour code.

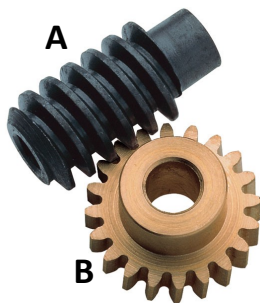
Red colour-coded sign: **Prohibition**

Yellow colour-coded sign: **Warning**



(4+4 marks)

5. The image shows a mechanism which consists of two components, labelled A and B.



- (i) Name component A and component B.

Component A: **Worm**

Component B: **Worm wheel**

- (ii) Suggest **one** advantage of using this mechanism when manufacturing electro-mechanical control elements in project work.

Speed reduction allows for greater control, change of direction of motion can be useful in project work, etc.

(4+4 marks)

6. Organising time, people and a budget are essential aspects when managing a project. Briefly outline any **two** of the aspects listed below.

Time: **It is important that tasks are individually completed on time. Otherwise the completion of the project could be delayed significantly. Some tasks may occur simultaneously which also needs to be considered, etc.**



People: **Individuals take responsibility for different elements of the project. It is important that everyone works together to ensure the completion of the project, etc.**

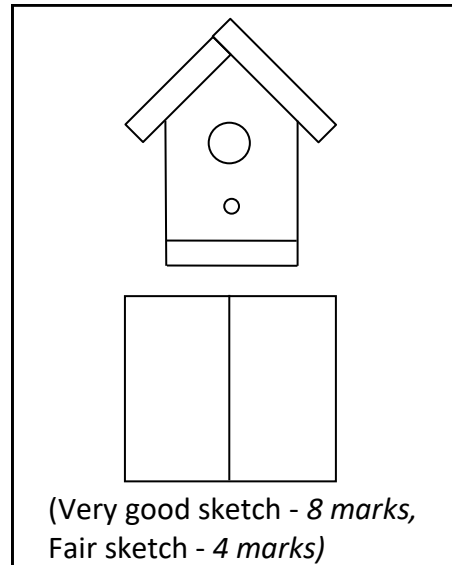


Budget: **The cost of a project should be estimated before it commences. Poor budgetary planning could result in the project running over budget, etc.**



(4+4 marks)

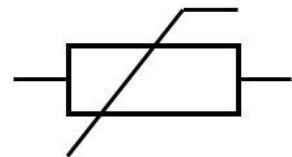
7. The image shows a wooden birdhouse. In the box provided, make a well-proportioned 2D sketch of the elevation looking in the direction of arrow **A** and the plan looking in the direction of arrow **B**.



8. The graphic shows the symbol for a component commonly used in electronics.

- (i) Name the electronic component.

Thermistor.



- (ii) A voltage of 9 V is connected across a resistor. A current of 0.06 A flows through the resistor. Calculate the value of the resistor.

Note: $R = V/I$

$$R = 9/0.06 = 150 \, \Omega$$

(4+4 marks)

9.



Adidas have used 1.8 million recycled plastic bottles to build a *sustainable* high school football field in Miami, Florida. These recycled bottles were all gathered from remote islands and beaches.

- (i) Explain what is meant by the term sustainable.

Meeting the needs of society without comprising the needs of future generations. In using recycled bottles to build the pitch, there is less reliance on exploiting further natural resources, etc.

- (ii) State **two** advantages of using recycled bottles for this purpose.

Better for the environment, less exploitation of natural resources, etc.

(4+4 marks)

10. The image shows a *USB* stick commonly used for storing photographs, videos and audio files.

(i) What do the letters USB stand for?

USB: **Universal Serial Bus.**

(ii) Name a file type commonly used when saving **any two** of the following;

Photographs: **JPEG, PNG, TIFF, etc.**

Video: **MP4, MOV, WMV, etc.**

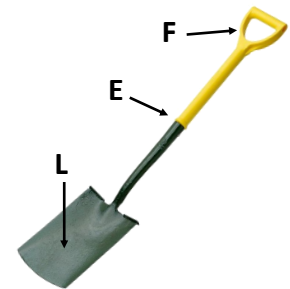
Audio: **MP3, AAC, WMA, etc.**



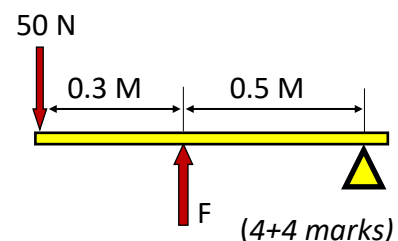
(4+4 marks)

11. The image shows a garden spade which acts as a lever.

- (i) On the image, label the load, the effort and the fulcrum when the spade is in use.
- (ii) A lever diagram is shown below. If a force of 50 N is applied as shown in the diagram, calculate the force **F** required to balance the lever.

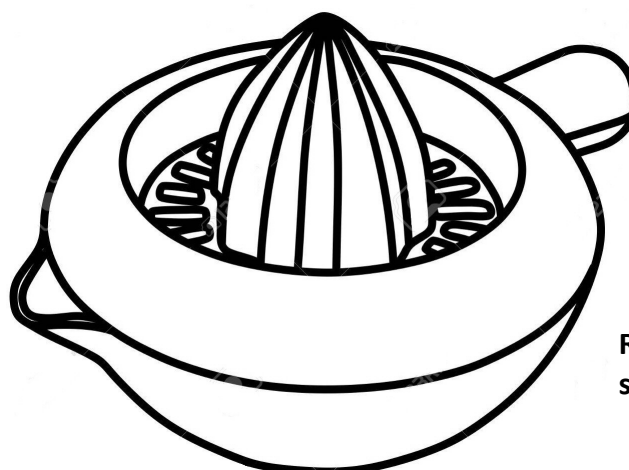


$$\begin{aligned} F \times 0.5 \text{ M} &= 50 \text{ N} \times 0.8 \text{ M} \\ F &= 40 \text{ NM} / 0.5 \text{ M} \\ F &= 80 \text{ N} \end{aligned}$$



(4+4 marks)

12. Use **two** graphic techniques to enhance the representation of the juicer shown.



Rendering, colour,
shadow, hatching, etc.

(4+4 marks)



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Section B - Core

(24 marks)

Answer **one** question from the two questions presented.

Each question in Section B carries 24 marks.

Section C - Options

(40 marks)

Answer **one** of the five optional questions presented.

All questions in Section C carry 40 marks.

Section B - Core *Answer Question 2 OR Question 3.*

Question 2 - Answer 2(a) and 2(b)

(a) - 10 marks, (b) - 8 marks, (c) OR (d) - 6 marks

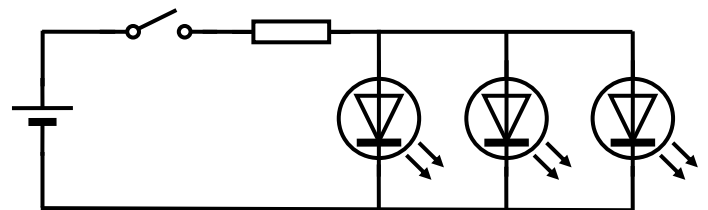
- 2(a)** (i) Outline **two** ways in which this laptop stand meets the needs of a typical user.
Adjustable height, adjustable angle, portable, etc.
- (ii) Suggest a suitable material for the manufacturer of the support legs. Give **one** reason for selecting this material.
Aluminium, ABS– lightweight, strong, etc.



Support legs

(10 Marks, 6+4)

- 2(b)** (i) Outline **two** benefits of using light emitting diodes (LEDs) for this purpose.
Use less power, brighter, size, etc.
- (ii) Draw a labelled diagram of a suitable circuit for the LED light source. Include a switch and a battery power supply.



- (iii) Using notes and sketches, describe how the LED light source could be attached to the stand.

Annotated sketch of a clip assembly or nut and bolt assembly, etc.

(8 Marks, 2+4+2)

Answer 2(c) or 2(d)

- 2(c)** The majority of sales of the *FlapZen* are transacted online.



- (i) State **two** advantages of purchasing goods online.
Easier, don't have to go to shop, price check, etc.
- (ii) Outline **two** precautions people should take when purchasing goods online.
Buy from a secure site, be careful disclosing information, be wary of false advertising, etc.

OR

(6 Marks, 4+2)

- 2(d)** The packaging of goods is a major environmental concern for manufacturers and retailers.

- (i) State **two** ways in which manufacturers can limit their environmental impact when packaging their goods.
Focus on more using more sustainable materials, reduce the volume of packaging, reduce the use of plastics, etc.
- (ii) The image opposite shows boxes made from *corrugated cardboard*.

Using notes and sketches, describe what is meant by the term corrugated cardboard.

Shaped into parallel ridges and grooves so as to give added rigidity and strength, etc.



(6 Marks, 4+2)

Question 3 - Answer 3(a) and 3(b)

(a) - 10 marks, (b) - 8 marks, (c) OR (d) - 6 marks

- 3(a)** (i) Outline **two** advantages of 3D printing in the manufacture of bespoke (once-off) items.
Rapid prototyping, cost effective, print on demand, a wide range of materials, minimises waste, etc.

- (ii) Suggest **two** other ways in which sporting equipment has been enhanced through technological advancements.

Greater choice in materials, data tracking, high performance cameras for line-calling systems, e.g., Hawkeye, etc.



(10 Marks, 6+4)

- 3(b)** (i) Briefly describe what is meant by the terms *additive* and *subtractive* in reference to manufacturing.

Additive manufacturing is an appropriate name to describe the technologies that build 3D objects by adding layer-upon-layer of a material, whether the material is plastic, metal, concrete, etc.

Subtractive manufacturing is a process where 3D objects are constructed by successively cutting material away from a solid block of a material. Subtractive manufacturing can be done by manually cutting the material but is most typically done with a CNC Machine.

- (ii) Outline which of the processes at **3(b)(i)** has the lesser environmental impact.

Additive manufacturing has the smaller environmental impact as it produces no waste.

- (iii) Name **one** other CAM process commonly used in schools. Briefly outline the benefits of this process for student project work.

CNC router, laser cutting machine, etc. Accuracy, efficiency, speed, etc.

(8 Marks, 4+2+2)

Answer 3(c) or 3(d)

- 3(c)** (i) State **two** advantages of using an electric bicycle in an urban setting.

Less time waiting in traffic, better for the environment, assisted battery power when pedalling, lower running cost compared to cars, etc.



- (ii) It costs a consumer €1.05 to fully recharge the battery of an electric bicycle each week.

Calculate the overall cost to the consumer to charge the bicycle for thirty-five days.

€1.05/7 = €0.15 per day Cost for thirty-five days: €0.15 x 35 = €5.25

(6 Marks, 4+2)

OR

- 3(d)** (i) Explain **any two** of the terms recycling, upcycling, and composting.

Recycling involves the process of converting waste material into reusable material, etc.

Upcycling involves reusing discarded objects or material in such a way to produce products of a higher quality or value than the original, etc.

Composting is an aerobic method of decomposing organic solid waste materials into humus-like material which is a good plant fertilizer, etc.

- (ii) In the case of **any two** processes below, state whether it is recycling, upcycling or composting.

1. Cutting up old jeans to make a bag (Upcycling)	3. Melting old drink cans to make new cans (Recycling)
2. Breaking down vegetable kitchen waste (Composting)	4. Making handbags from old plastic bottles (Upcycling)

Section C - Options *Answer any one of the five optional questions.*

(a) - 10 marks, (b) - 20 marks, (c) OR (d) - 10 marks

Option 1 - Applied Control Systems - Answer 1(a) and 1(b)

1(a) Coffee machines similar to the one in the image opposite, are an example of automation in the home.

(i) State **two** other examples of automation in the home.

Washing machine, dishwasher, security systems, etc.

(ii) Briefly outline **two** advantages of automation in the home.

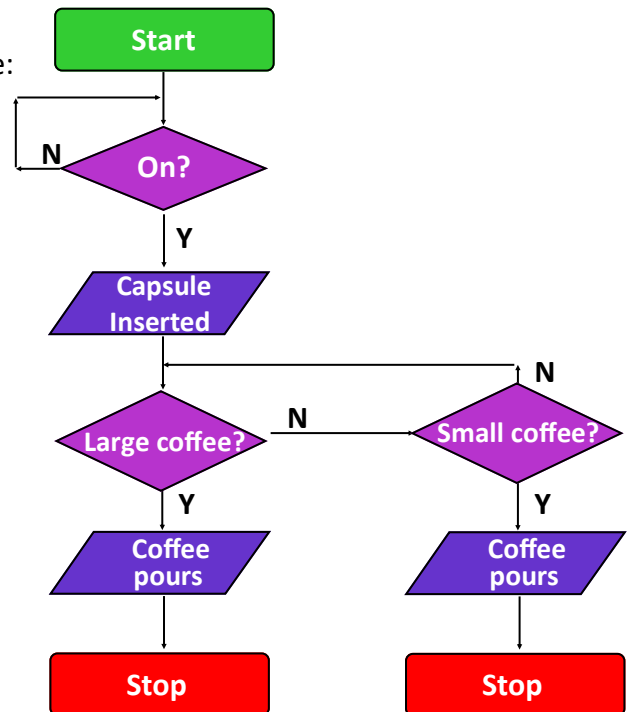
Comfort, reliability, remote access/control of systems, etc.



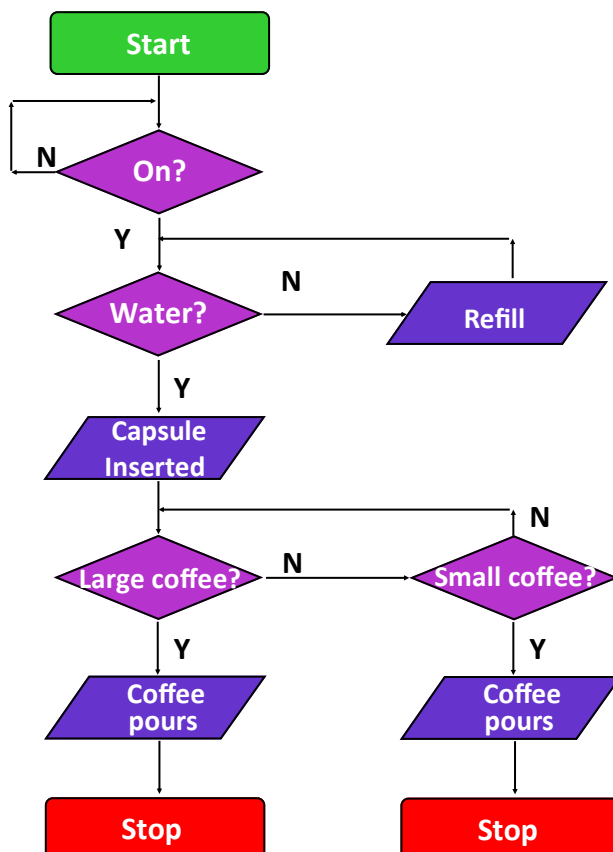
(10 Marks, 6 + 4)

1(b) (i) Complete the given flowchart to operate the coffee machine in the following sequence:

- the coffee machine is powered on
- the capsule is inserted
- a large or a small coffee is selected
- the coffee pours.



(ii) Suggest a modification to the flowchart to indicate when the water container is empty.



Any valid alternative solution accepted.

(iii) Describe how you would indicate, on the machine, that the water container needs refilling.
Use an LED indicator, etc.

(20 Marks, 8 + 6 + 6)

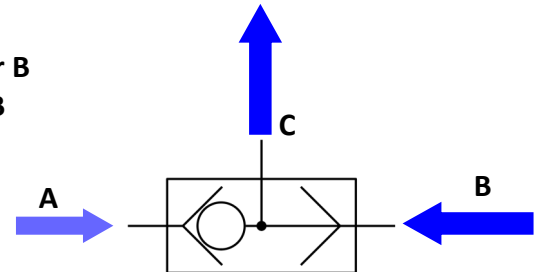
Answer 1(c) or 1(d)

1(c) The image shows a shuttle valve used in pneumatic circuits. Also shown is the symbol for a shuttle valve.



- (i) Explain how a shuttle valve works with reference to the parts labelled **A**, **B** and **C**.

The shuttle valve switches based on the pressures entering either of the input ports A or B and exiting at port C. If both input ports A and B start to receive compressed air, the connection with the higher pressure takes precedence and it is output to port C, etc.

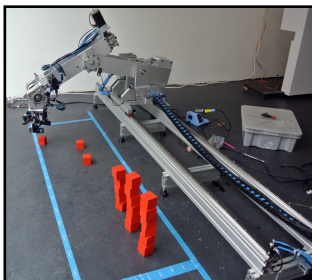


- (ii) Give **one** practical example of where a shuttle valve could be used in industry. **A shuttle valve can allow a machine to be operated using two switches for safety purposes, aircraft landing gear systems, etc.**

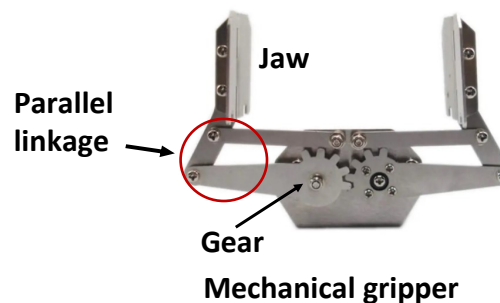
(10 Marks, 6 + 4)

OR

1(d) The image shows an industrial robotic device used for picking and placing objects.



- (i) Give **one** advantage to using a robotic device for this type of work. **Speed, increased productivity, eliminate human error, etc.**
- (ii) Describe, using notes and annotated sketches, a suitable *mechanical gripper* for the device. **Any relevant example with a description, etc.**



(10 Marks, 4 + 6)

Option 2 - Electronics and Control - Answer 2(a) and 2(b)

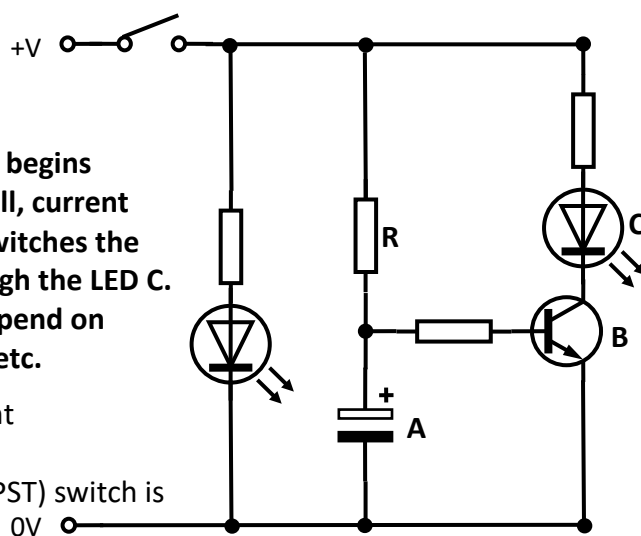
(a) - 10 marks, (b) - 20 marks, (c) OR (d) - 10 marks

- 2(a)** (i) State **two** measurements that can be taken using a multimeter.
Voltage, current, resistance, etc.
- (ii) A multimeter can also be used as a *continuity* tester. Describe the purpose of testing continuity in a circuit.
The purpose of testing continuity is to fault-find breakages in an electrical circuit.
Once the fault has been found, appropriate steps can be taken to repair the circuit, etc.
(10 Marks, 6 + 4)

- 2(b)** (i) Name components **A** and **B** in the circuit.
A: Electrolytic Capacitor B: Transistor
- (ii) Briefly describe the operation of the circuit.

When the circuit is turned on, the capacitor begins to fill with charge. When the capacitor is full, current flows to the base of the transistor B. This switches the transistor on allowing current to flow through the LED C. The time it takes to fill the capacitor will depend on the value of resistor R and the capacitor A, etc.

- (iii) Redraw the circuit to include an indicator light emitting diode (LED) that will light up once the master on/off single pole single throw (SPST) switch is closed.



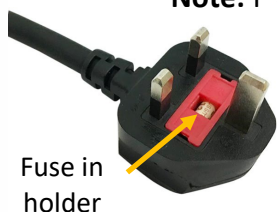
(20 Marks, 6 + 8 + 6)

Answer 2(c) or 2(d)



- 2(c)** (i) State the purpose of a fuse.
It is a safety device to stop a circuit from being overloaded. It protects an electrical appliance from a damaging surge of current, etc.

- (ii) Calculate the current this fan heater will draw from a 230 V supply.
Note: $P = V \times I$



$$\begin{aligned} 2000 \text{ W} &= 230 \text{ V} \times I \\ I &= 2000/230 = 8.69 \text{ Amps (A)} \end{aligned}$$

(10 Marks, 6 + 4)

OR

- 2(d)** (i) Briefly describe what is meant by the term circuit simulation when referring to the design of circuits.

Circuit simulation software allows for circuits to be prototyped virtually before being manufactured. Circuits can be tested without physical damage to components, etc.

- (ii) Outline **two** benefits of using circuit simulation software when designing circuits.

Speed, safe failure environment, use components you do not physically have in stock, etc.

(10 Marks, 6 + 4)

Option 3 - Information and Communications Technology - Answer 3(a) and 3(b)

(a) - 10 marks, (b) - 20 marks, (c) OR (d) - 10 marks

- 3(a)** (i) Outline **two** social benefits of playing games online.
Sense of achievement/ accomplishment in the game, socialising with and relate to other players, getting absorbed in the game world, escaping/take a break from real life for a short time, having a sense of control over the world, etc.
- (ii) Outline **one** possible consequence for your health of spending too much time playing computer games.
Suggest **one** action that could be taken to avoid the consequence you have outlined.
Physical (including wrist, neck and elbow pain), sleep disorders, long-term addiction could lead to obesity, etc.
Set time limits/keep phones and tablets out of bedroom/get exercise during the day, etc.
- (10 Marks, 6 + 4)

- 3(b)** (i) Outline **two** advantages of using fibre-optic cables instead of traditional copper cables.
Speed, reliability, greater bandwidth, etc.
- (ii) Discuss why fibre-optic internet access is not available in every home in Ireland.
Lack of or limited infrastructure in parts of Ireland, in parts of rural Ireland it may not be cost-effective for a provider to install fibre-optic cable, etc.
- (iii) Fibre-optic internet to the home requires a *modem* and a *router*.
Outline a difference between a modem and a router.
A modem connects a home network to the wider internet, etc.
A router allows all the wired and wireless devices to use the internet. It also allows these devices to connect to each other without having to use the internet, etc.
Modern devices combine a modem and a router in the same unit, etc.
- (20 Marks, 8 + 6 + 6)

Answer 3(c) or 3(d)

3(c)

- (i) Suggest **two** advantages of using this type of camera instead of a camera integrated into a smartphone.
Better quality, better zoom, etc.
- (ii) Outline **two** differences between a .JPEG image and a .PNG image.
.JPEG has lossy compression whereas .PNG has lossless compression— .PNG has the same image quality before and after compression.
The quality of .JPEG files is significantly lower than that of the .PNG files, etc.



(10 Marks, 6 + 4)

OR

3(d) *Biometrics* are commonly used to grant access to systems, devices or data.



- (i) Briefly describe what is meant by the term biometrics.
Fingerprints, retina/facial recognition, etc.
- (ii) Outline **two** advantages of using biometrics to access devices or data.
Security of data, nobody else can access, etc.

(10 Marks, 6 + 4)

Option 4 - Manufacturing Systems - Answer 4(a) and 4(b)

(a) - 10 marks, (b) - 20 marks, (c) OR (d) - 10 marks

- 4(a)** (i) Outline **two** reasons why electronic devices have a short life-cycle.
Cheaper to replace, advances being made, increase sales, etc.
- (ii) Suggest **two** ways in which the environmental impact of these short life-cycle products could be minimised.
Recycle parts, upcycle into new products, use more sustainable materials/processes, etc.

(10 Marks, 6 + 4)

- 4(b)** (i) State **two** advantages of mass-producing items such as smart televisions.
Faster production, can be made cheaper, higher levels of efficiency, etc.
- (ii) Give **two** quality characteristics that could be associated with a high quality smart television.
Clear picture, lightweight, reliable, etc.
- (iii) Outline **two** strategies a manufacturer of televisions could adopt to be more competitive than rival manufacturers of televisions.
Offer competitive prices, offer advanced features, focus on marketing/branding, focus on quality after sales care, etc.



(20 Marks, 8 + 6 + 6)

Answer 4(c) or 4(d)

- 4(c)** (i) Suggest **two** tests that could be carried out on a television prior to being packaged for distribution.
Test circuitry, resolution of the screen, test viewer experience, functionality of apps, etc.



- (ii) State **two** advantages for a company which flat-packs their products.
Less storage required, safer for transportation, outsource assembly to the consumer, etc.

(10 Marks, 6 + 4)

OR

- 4(d)** (i) Give **two** advantages of an e-Kanban system over a traditional Kanban system.
Easier to track inventory, tracking done in real time (no lag time), greater volume of materials/components can be monitored using software, ability to adjust to changing demand, etc.
- (ii) Suggest **two** items of information that could be contained on a barcode such as the one shown.
Price, weight, date of manufacture and expiry, name of the manufacturer of the product, etc.



(10 Marks, 6 + 4)

Option 5 - Materials Technology - Answer 5(a) and 5(b)

(a) - 10 marks, (b) - 20 marks, (c) OR (d) - 10 marks

- 5(a) (i) Briefly outline what is meant by *synthetic* materials and *natural* materials.

Synthetic materials are man-made and are not found in nature. They are created by mixing different chemicals, or prepared compounds and substances together, e.g., nylon/polyester/acrylic.

Natural materials are those that are found in nature, e.g., wool/linen/silk/cotton/leather.

- (ii) Draw the table below into your answerbook and complete the missing information.

Body part	Material Classification	Material
Seat	Fabric	Leather
Tyre	Composite	Steel reinforced rubber
Headlight lens	Ceramic	Glass

(10 Marks, 4 + 6)

- 5(b) (i) Using notes and sketches, briefly describe the process of laminating wood.
Wood laminating is the process of forming multiple sheets of veneer, chips or solid timber using moulds and bonded together using very strong adhesives, to produce rigid, lightweight structures.
- (ii) Give **two** properties of ash that make it suitable for lamination.
Flexible, strong, hard, shock resistant, etc.
- (iii) Permanent and semi-permanent joining methods are used in the assembly of car parts. Briefly outline the difference between both joining methods and give **one** example of **each**.
Permanent joints don't allow dismantling of assembled components without rupturing them, e.g., welded joint, use of adhesives. Semi-permanent joints allow easy dismantling of assembled components without breaking them, e.g., nut and bolt, clip fastener, etc.

(20 Marks, 8 + 6 + 6)

Answer 5(c) or 5(d)

- 5(c) (i) Suggest **two** characteristics of the materials used in the Morgan Plus Six car that would indicate that they are of high quality.
Strong, durable, aesthetically appealing, etc.
- (ii) Suggest **two** quality standards to be met in the manufacture of the seats for this car.
Ergonomically designed, conformance to safety regulations, quality of materials, etc.

(10 Marks, 6 + 4)

OR

- 5(d) (i) Explain what is meant by the term smart material.
Smart materials, also called intelligent or responsive materials, are designed materials that have one or more properties that can be significantly changed in a controlled fashion by external stimuli, such as stress, moisture, electric or magnetic fields, light, temperature, pH, or chemical compounds.
- (ii) Name, and give a use for, one other smart material.
Thermochromic material - children's forehead thermometer strip, QTC-pressure sensor.

(10 Marks, 6 + 4)



Leaving Certificate Examination, 2021

Technology

Coursework Briefs

Ordinary Level and Higher Level

200 marks

The Thematic Briefs for the Leaving Certificate Examination 2021 are given overleaf.

The Coursework must be available for assessment by Friday 26 March 2021.

Leaving Certificate Technology

Ordinary Level and Higher Level 2021

Instructions to candidates:

1. The coursework submitted for assessment must consist of two components:
 - a design folio *and*
 - an artefact.
2. If **either** assessment component (written examination or coursework) is submitted at Ordinary Level, the subject is graded at Ordinary Level.
3. All coursework submitted for assessment must be clearly identified with your examination number.
4. The coursework submitted for assessment must be **your own individual work** and must be completed in school under the supervision of the class teacher.
5. Your coursework must not be removed from the school setting under **any** circumstances as doing so may result in such coursework being considered invalid.
6. The design folio should record all stages of your work and should document how the artefact meets the stated thematic brief.
7. When using research sources, including the Internet, the sources **must be acknowledged**. Research material copied directly from the Internet or from other sources and presented as your own work will not receive any marks.
8. The coursework should display knowledge and skills developed through your study of the core and chosen options.
9. All important operating features of the artefact must be clearly visible and be easily accessible without dismantling.
10. Where an electrical supply is used to operate the artefact, it should be of low voltage output. Where specialised equipment is required, it must be set up by you, have clear operating instructions and be ready to use.
11. The coursework presented for assessment must be displayed in an attractive manner. Multimedia presentations, where submitted, must be of **maximum** 3 minutes duration, must be set up by the candidate and must be ready for viewing.

The coursework must be available for assessment by Friday 26 March 2021.

Leaving Certificate 2021 - Ordinary Level

Thematic Brief

In 2019, the multinational financial services company *Visa* processed a total of 138.3 billion financial transactions between businesses and customers. This statistic highlights that we live in a competitive and consumer driven world - one where businesses continuously look for new ways to sell products and services to potential customers.

Marketing is a process used by businesses to communicate the value of a product or service to potential customers. The success or failure of a new product often depends on the effectiveness of its marketing campaign.

In this context, design and make a working model of an interactive marketing display to promote a product in a context of your choice.

Using modern materials and technologies, your model should incorporate an electronic and/or mechanical system and should be well presented.

Note: The maximum dimension of the artefact you present for assessment should not exceed 500 mm.

If multimedia presentations are used to enhance your display, a hardcopy printout and a digital file (USB flash drive) must be included in your portfolio.

Coursework at Ordinary Level is weighted as follows:

- Design Folio - 40% of marks
- Artefact - 60% of marks

Total - 200 marks

Design Folio - Ordinary Level - 80 marks			
No.	Heading	Description	Marks
1	Analysis, research and investigation	Analysis of thematic brief. Research into chosen area. Analysis of existing solutions.	10
2	Overall management of the project	Analysis of available resources, time and budget constraints; proposed timeframe etc.	5
3	Environmental impact	Impact of materials and production processes; product use; suitability for reuse/recycling.	5
4	Design ideas and selection of optimum solution	Annotated freehand sketches outlining three possible solutions. Optimum solution identified and justified.	10
5	Sketches and drawings for manufacture	Detailed annotated sketches and drawings including all elements/aspects of solution; circuit diagrams/ flowcharts/ models/prototypes/dimensions/scale/assembly details.	15
6	Production planning	Materials and component lists; scheduling, work breakdown structure, costing.	10
7	Product realisation	Sequence of manufacture including photographic record.	15
8	Evaluation and testing	Testing against chosen brief. Evaluation of final artefact. Comparison of planned schedules and actual schedules. Suggested modifications with justification.	5
9	Presentation and ICT	Correct sequence of presentation. Quality of material presented. ICT skills in production of folio.	5

Artefact - Ordinary Level - 120 marks			
No.	Heading	Description	Marks
1	Artefact meets theme & specification	Solution presented fulfils the thematic brief and specifications.	15
2	Creativity	Creativity in design, aesthetics & ergonomics. Creative and appropriate use of materials.	15
3	Production skills	Processing of materials. Assembly of materials and components. Range and depth of skills.	30
4	Functionality	Artefact works well. Appropriate/limited use of commercial components/solutions.	30
5	Quality and finish	High quality manufacture. Artefact well finished. Due regard for health and safety.	20
6	Presentation	Coursework well presented. Parts well integrated and labelled where appropriate.	10

Note: *While the general headings and marks above will largely remain the same, breakdowns may vary depending on the actual brief for any given year.*

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