



*Leaving Certificate Examination, 2012*

# *Technology*

## *Higher Level*

*Friday, 22 June*  
*Afternoon, 2:00 - 4:30*

There are **three** Sections in this paper. Attempt **all three** Sections.

**Section A:** Core - Short-answer questions.

**Section B:** Core - Long-answer questions.

**Section C:** Options - Long-answer questions.

### *Section A - Core* (72 marks)

**Instructions:**

- (a) Answer **any twelve** questions in the spaces provided.  
All questions in Section A carry 6 marks.
- (b) Draw all sketches in pencil.
- (c) Hand up this booklet at the end of the examination.
- (d) Write your examination number in the box provided  
and on all other pages used.

**Examination Number:**

Centre Number

Section	Mark
Section A	
Section B	
Section C	
Total	
Grade	

**Section A.** Answer *any twelve* questions. All questions carry 6 marks.

1. In the promotion of alternative sources of energy in Ireland, the harvesting of wind energy has been prioritised. Outline the main advantages of a wind-powered energy system.

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2. Corrugated cardboard is a commonly used material in the packaging industry.

Describe **one** advantage and **one** disadvantage of using cardboard rather than expanded polystyrene in the packaging of electrical items.

Advantage \_\_\_\_\_

\_\_\_\_\_

Disadvantage \_\_\_\_\_

\_\_\_\_\_

Give **one** reason for the corrugation of cardboard. \_\_\_\_\_

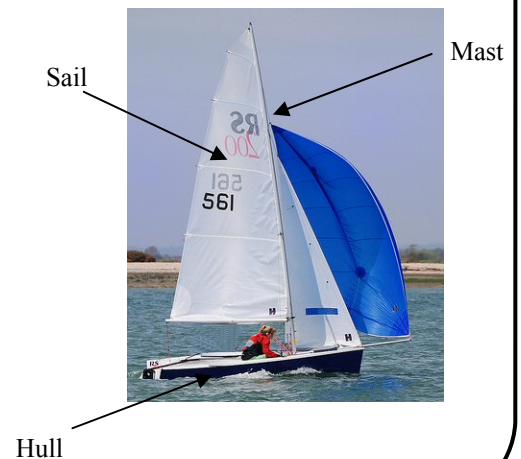
\_\_\_\_\_



3. A variety of materials is used in the manufacture of modern boats.

Name a suitable material to be used for each boat-part listed and outline a property of each material.

Part	Material	Property
Sail		
Mast		
Hull		



4. Irish furniture designer and architect, Eileen Gray, produced this design for her Bibendum Chair in the 1920's, taking inspiration from the 'Michelin man' tyre character. The legs are made from chrome-plated tubular steel.

(i) Outline **two** anthropometric aspects associated with the design of this chair.

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(ii) Suggest **one** reason for a chrome-plated finish.

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5. The forces acting on a structure can be described in terms of *tension*, *compression*, *shear* and *torsion*. Briefly explain **any three** of these terms.

(i) \_\_\_\_\_

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(ii) \_\_\_\_\_

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(iii) \_\_\_\_\_

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6. (i) Name the computer symbol shown.

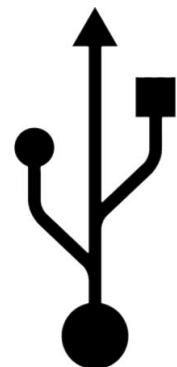
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(ii) Name **two** devices associated with the use of this symbol.

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7. Distinguish between *potential energy* and *kinetic energy*.

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Identify an energy conversion that takes place in:

- (i) A 12V car battery \_\_\_\_\_
- (ii) An electric motor \_\_\_\_\_

8. A design for a wooden toy is shown.

Compile a Work Breakdown Structure (WBS) diagram for the manufacturing of this toy.



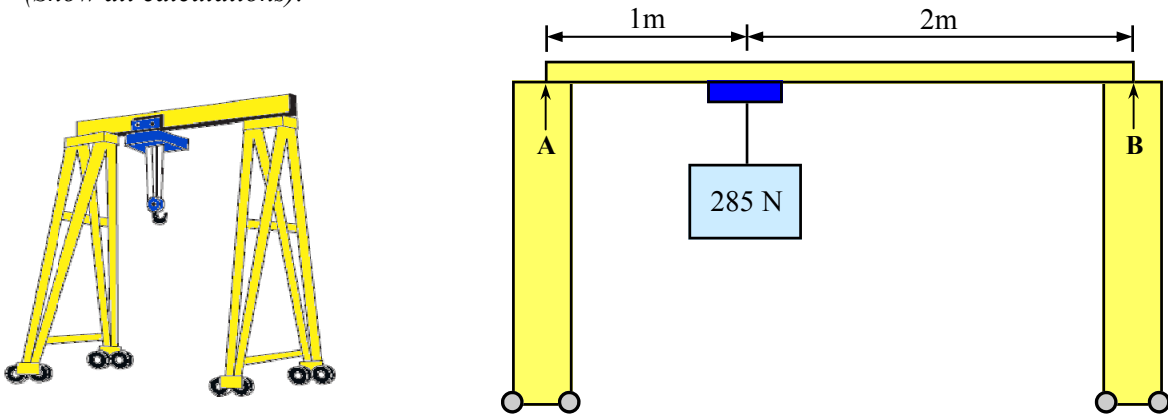
9. Supermarkets use automated point of sale (POS) equipment or 'checkouts' with barcode readers.

Outline **two** functions of a barcode system.

- (i) \_\_\_\_\_
- \_\_\_\_\_
- (ii) \_\_\_\_\_
- \_\_\_\_\_

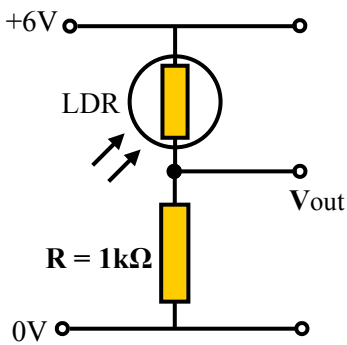


10. The graphics show a gantry crane. Using the principle of moments calculate the reaction force at pillar A. (Show all calculations).



Calculation:

11. The circuit shown uses a voltage divider to sense light levels.



- (i) State the principal property of the LDR that is used to sense light levels.

\_\_\_\_\_

- (ii) Under changing light conditions, the value of the LDR varies from  $2000\Omega$  to  $3000\Omega$ .

For each resistance given, calculate the corresponding values for  $V_{out}$ .

$V_{out}$  at  $2000\Omega$

$V_{out}$  at  $3000\Omega$

12. Bearings, such as the system shown, are commonly used in machines and vehicles.



(i) Outline **two** reasons for using bearing systems.

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(ii) The generation of heat due to friction needs to be minimised in bearings. Name **two** lubrication materials used to minimise heat.

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13. Make well-proportioned freehand sketches of **three** principal orthographic views of the laptop shown.



14. In the standardisation of safety signs, colour and shape are important.  
Four safety signs are shown.



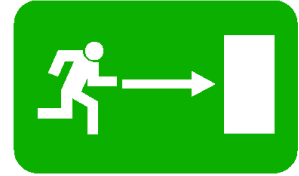
(i) Yellow - caution



(ii) Blue - mandatory



(iii) Red - fire



(iv) Green - positive action

State the meaning of the signs shown at (i) and (ii) above:

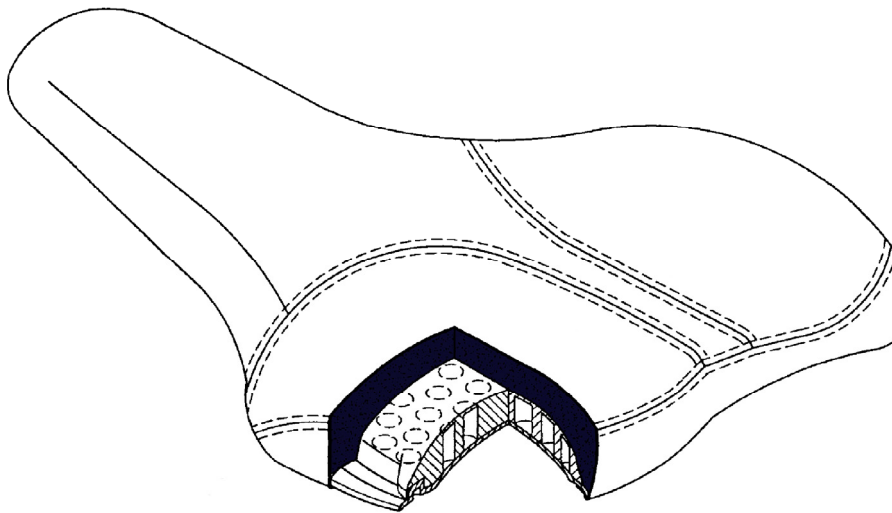
(i) \_\_\_\_\_

(ii) \_\_\_\_\_

Outline the importance of colour in safety sign design.

\_\_\_\_\_  
\_\_\_\_\_

15. Use **two** graphic techniques to enhance the graphic representation of the bicycle saddle shown.



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