



Leaving Certificate Examination, 2014

Technology

Higher Level

Friday, 20 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 June 2011, An Bord Pleanála refused planning permission for a €160 million twin-incinerator project at Ringaskiddy, Co. Cork.

(i) Outline **one** advantage of incineration.

(ii) Outline **one** disadvantage of incineration.



2. 'GORE-TEX®' is classified as a *smart fabric* and is used extensively for all-weather outdoor clothing.

(i) Explain what is meant by a smart fabric.

(ii) Give **one** other example of a smart material.



3. Many plastic products have the logo shown embossed or printed on them.

(i) Explain the meaning of the term **HDPE**.

(ii) Outline the main difference between *thermoplastic* and *thermosetting* plastic materials.

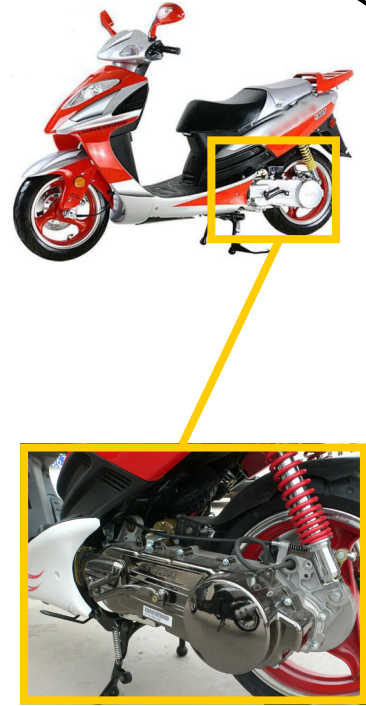


4. The sprocket on the engine of a scooter has 75 teeth and the sprocket on the back wheel has 150 teeth.

(i) If the engine sprocket revolves at 1500 rpm, what is the rpm of the sprocket on the back wheel?

Calculation:

(ii) Give **two** reasons why lubrication is used for this sprocket system.

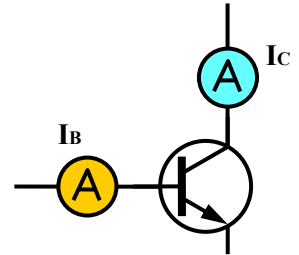


5. Part of a transistor testing circuit which includes two ammeters is shown.

(i) Give **two** main functions of a transistor.

(ii) Calculate the gain (h_{FE}) of the transistor shown if the ammeter readings at $I_B = 250\mu A$ and $I_C = 50mA$. **Note:** $h_{FE} = I_c / I_b$

Calculation:



6. A node used in the construction of a *critical path diagram* is shown below. These diagrams are used to ensure that projects are completed within the specified time.

(i) Explain the terms EST and LST.

EST _____

LST _____

(ii) Identify the missing terms at X and at Y.

X _____

Y _____

EST			X
Activity Name	Duration		
LST			Y

7. An *ergonomic* laptop stand is shown in the graphic.

(i) Explain the term ergonomic.



(ii) Outline **two** reasons why laptop stands are now commonly used in the workplace.

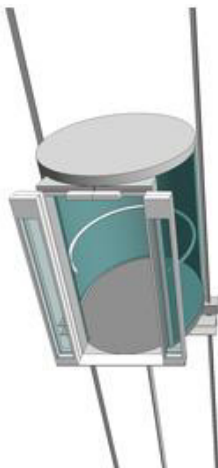
8. Product development can involve learning from other designs which have features similar to those required by the new product.

(i) Outline **one** method used to analyse an existing product.

(ii) Explain the purpose of a Quality Control (QC) system in product manufacture.



9. A hotel elevator has a load carrying capacity of 8 persons (average weight 80 kg). The elevator has a factor of safety of 4. Calculate the design load of the elevator.



Calculation:

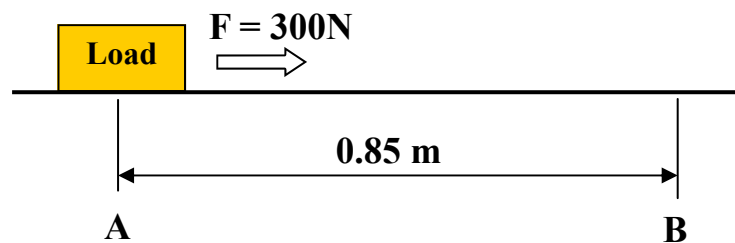
10. *Rapid prototyping* is used in the development of new products.

(i) Name **one** rapid prototyping method.



(ii) Outline **two** reasons for manufacturing a prototype of a new product before full production commences.

11. Calculate the **power** required to move the load shown in the graphic below from position **A** to position **B** in three seconds.



Calculation:

12. The European Union aims to generate 20% of its energy from renewable sources by 2020. (*Renewables Directive 2009/28/EC*)



(i) List **three** sources of renewable energy.

(ii) Outline **two** factors which contribute to a worldwide increase in the demand for energy.

13. Make well-proportioned freehand sketches of **two** principal orthographic views of the printer shown.



14. Social networking sites play a significant role in the lives of many people.

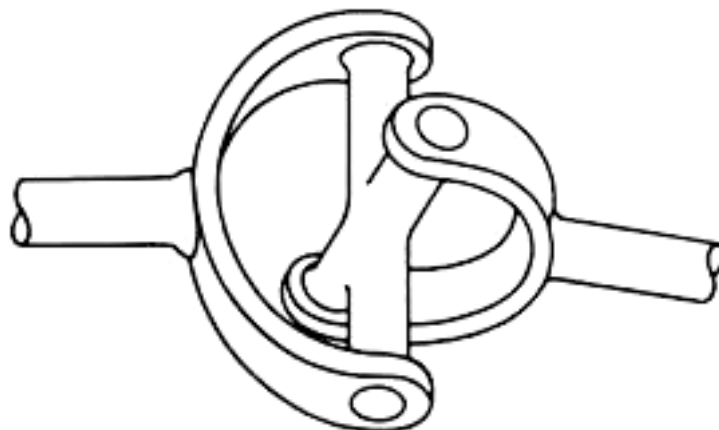
Describe the impact of *on-line advertising* and *real-time reporting* as features of social networking.



On-line advertising:

Real-time reporting:

15. Use **two** graphic techniques to enhance the representation of the universal joint shown.



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