

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

DESIGN AND TECHNOLOGY

0445/12

Paper 1 Design

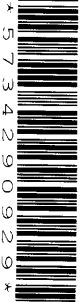
October/November 2010

1 hour 15 minutes

Candidates answer on the pre-printed A3 Answer Sheets.

Additional Materials: Standard drawing equipment

To be taken together with the optional paper for which you have been entered in one session of 2 hours and 15 minutes



READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name in the spaces on **both** printed Answer Sheets.

Write in dark blue or black pen.

You may use a soft pencil for any diagrams, graphs or rough working.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **one** question.

Write/draw your answers in the spaces provided on the Answer Sheets.

You may use a calculator.

At the end of the examination, fasten all your work securely together.

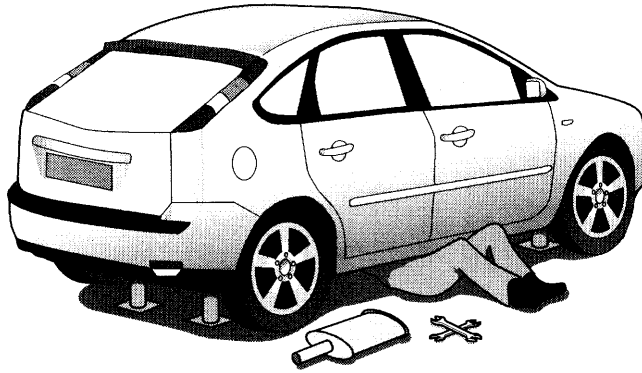
The number of marks is given in brackets [] at the end of each question or part question.

This document consists of 4 printed A4 pages and an Insert.



Answer **one** question only on the A3 pre-printed answer sheets provided.

- 1 It can be very difficult to crawl underneath a car to repair parts if the access is awkward and tools are not easily at hand.



Design a device that would allow a person to slide under a car easily and would include provision to hold a few tools.

- (a) List **four** additional points about the function of such a device that you consider to be important. [4]
- (b) Use sketches and notes to show **two** different methods by which a device of this type could move. [4]
- (c) Develop and sketch ideas for the device. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]

- 2 Ski Well, a winter holiday company, is looking for a new feature for its catalogue, making it more appealing than other companies.



Design an animated or pop-up feature to appear in or on the Ski Well 2011 catalogue.

- (a) List **four** additional points about the function of such an animated or pop-up feature that you consider to be important. [4]
- (b) Use sketches and notes to show **two** types of mechanism that could be made from card materials. [4]
- (c) Develop and sketch ideas for an animated or pop-up feature. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline the method of producing a prototype of your solution in the school graphics studio. [6]

4

- 3 Plants in pots need to be watered regularly and this can cause problems when a person is away for a long period.



Design an automatic watering system that would keep the plants healthy when left for long periods.

- (a) List **four** additional points about the function of such a watering system that you consider to be important. [4]
- (b) Use sketches and notes to show **two** different ways of controlling the flow of water. [4]
- (c) Develop and sketch ideas for the watering system. [12]
- (d) Evaluate your ideas and justify why you have chosen **one** idea to develop more fully. [8]
- (e) Draw, using a method of your own choice, a full solution to the problem. Include construction details and major dimensions. [12]
- (f) Suggest suitable specific materials for your solution and give reasons for your choice. [4]
- (g) Outline a method used to manufacture **one** part of your solution in the school workshop. [6]