

No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without written permission from the IB.

Additionally, the license tied with this product prohibits commercial use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, is not permitted and is subject to the IB's prior written consent via a license. More information on how to request a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite de l'IB.

De plus, la licence associée à ce produit interdit toute utilisation commerciale de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, n'est pas autorisée et est soumise au consentement écrit préalable de l'IB par l'intermédiaire d'une licence. Pour plus d'informations sur la procédure à suivre pour demander une licence, rendez-vous à l'adresse suivante : <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin que medie la autorización escrita del IB.

Además, la licencia vinculada a este producto prohíbe el uso con fines comerciales de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales— no está permitido y estará sujeto al otorgamiento previo de una licencia escrita por parte del IB. En este enlace encontrará más información sobre cómo solicitar una licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

Design technology
Higher level
Paper 3

Friday 6 November 2020 (morning)

Candidate session number

--	--	--	--	--	--	--	--	--	--

1 hour 30 minutes

Instructions to candidates

- Write your session number in the boxes above.
- Do not open this examination paper until instructed to do so.
- Answer all of the questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for this examination paper is **[40 marks]**.



Section A

Answer **all** questions. Answers must be written within the answer boxes provided.

- HeatSmart has developed a range of thermostats for smart homes that are used to manage the temperature of a room. For example, the temperature of a room can be set to 20 °C at midday every day.

HeatSmart have recently introduced their Intelligent Thermostat that automatically sets the temperature of the room based on the preferences of its users. This can lead to a saving of energy and is indicated by the green HeatSmart globe icon that appears on the screen. The temperature for the room can be increased by rotating the dial clockwise, see **Figure 1**. Or it can be decreased by rotating the dial anti-clockwise, see **Figure 2**.

Figure 1: Rotating the dial clockwise

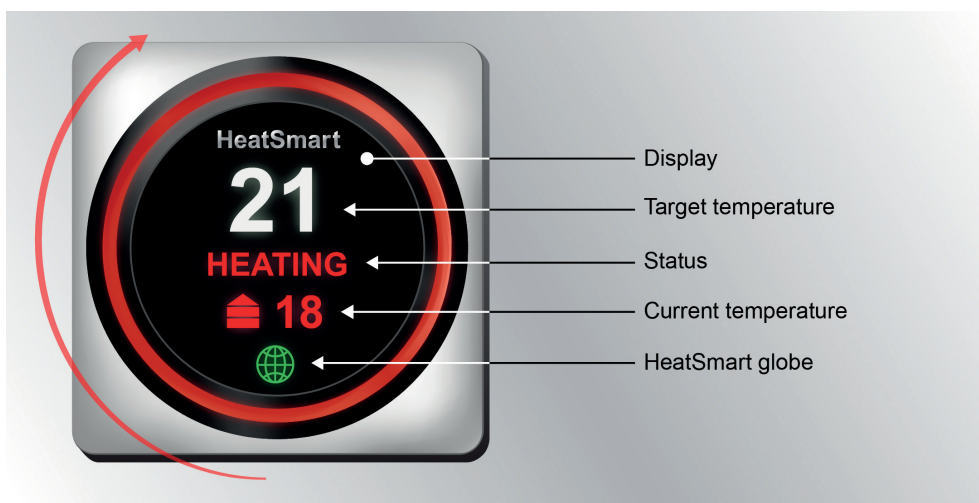


Figure 2: Rotating the dial anti-clockwise



(This question continues on the following page)



(Question 1 continued)

- (a) List **two** user-centred design (UCD) principles the Intelligent Thermostat's design team may have followed. [2]

.....

.....

.....

.....

.....

.....

- (b) Outline **one** way that the Intelligent Thermostat's design team would have considered population stereotypes. [2]

.....

.....

.....

.....

.....

.....

(This question continues on page 5)



Please **do not** write on this page.

Answers written on this page
will not be marked.



- 2. Mouna & Partners are manufacturers who specialize in school classroom furniture, see **Figure 3**. To meet their customers' orders and reduce the percentage of products that have to be returned to them, they have adopted a lean production philosophy as well as computer integrated manufacturing (CIM).

Figure 3: The company's best seller desk and chair duo



- (a) Outline **one** way computer integrated manufacturing (CIM) can enhance quality control. [2]

.....

.....

.....

.....

.....

.....

(This question continues on the following page)

Section B

Read the case study. Answer the following question. Answers must be written within the answer boxes provided.

- 3. Tony's Chocolonely was created by Teun van de Keuken in 2003. Teun had a mission to pay the chocolate farmers a fair wage and raise awareness of the exploitation of workers in the industry, see the logo in **Figure 4**. Customers are also given a guarantee that no rainforest has been destroyed to grow the cocoa trees.

Tony's Chocolonely has a large product family that offers chocolate bars in a number of different flavours and in two different sizes (47g and 180g). The chocolate bars have unequally divided chocolate pieces, see **Figure 4**.

Each year between October and December the company introduces three new limited edition chocolate bar flavours. The most popular of these three limited editions is then added to their product range.

Figure 4: Tony's Chocolonely



(This question continues on the following page)



(Question 3 continued)

- (a) Describe the corporate strategy that applies to the production of Tony's Chokolonely chocolate bars between the months of October and December. [2]

.....

.....

.....

.....

.....

.....

- (b) Outline **one** benefit to the company of creating a product family for the chocolate bars. [2]

.....

.....

.....

.....

.....

.....

- (c) Outline **one** way that pressure groups may have influenced the development of the Tony's Chokolonely brand. [2]

.....

.....

.....

.....

.....

.....

(This question continues on the following page)



References:

Figure 1 [heating thermostat] © International Baccalaureate Organization 2020.

Figure 2 [cooling thermostat] © International Baccalaureate Organization 2020.

Figure 4 Images provided with permission from Tony's Choclonely.



12EP12