Diploma Programme
Programme du diplôme
Programa del Diploma

Design technology
Higher level
Paper 3

5 November 2024

Zone A morning | **Zone B** morning | **Zone C** morning

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]**.

9 pages

12EP01

International Baccalaureate
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Bachillerato Internacional

Section A

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

1.   Jarra, by Twelve Degrees design studio, is a self-cooling clay water container. Its ergonomic body is moulded from earthenware clay with an aluminium and silicon lid.

Figure 1: Jarra is available in a product family of different natural clay colours

Figure 2: Jarra cools water without refrigeration

(a)   List **two** market research strategies that may have helped Twelve Degrees set the retail price of the Jarra.   [2]

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(b)   Outline **one** reason why Twelve Degrees would protect the Jarra with a registered design. [2]

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(Question 1 continued)

(c)   Outline how clay helps the Jarra meet Datschefski's safe principle of sustainable design.   [2]

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(d)   Explain why the Jarra is an example of ethical consumerism.   [4]

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2. The AccuVein AV500, by AccuVein Inc., uses infrared light technology to map a patient's veins onto their skin. This helps medical staff locate a patient's most accessible vein for more accurate injections.

Figure 3: AccuVein AV500

Figure 4: AccuVein AV500 pinpoints a patient's most accessible vein

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(Question 2 continued)

(a) List **two** user-centred design (UCD) strategies for user research that AccuVein may have used to determine the wants and needs of their user population. [2]

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(b) Outline **one** reason why the UCD team involved medical staff in the development of AccuVein AV500. [2]

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(c) Distinguish between field research and a usability laboratory for the evaluation of the AccuVein AV500. [2]

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(d) Explain how AccuVein AV500 meets the effectiveness usability objective. [4]

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Section B

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

3.   Virtual kitchens are restaurants that deliver food but do not have a location where customers can come to eat.

Customers view menus, then place and pay for their orders online. Virtual kitchens prepare and package the orders then alert a third-party to collect and deliver them.

Anyday Kitchen is a successful virtual kitchen, based in the United Arab Emirates (UAE), that owns and operates over 30 different online food brands. To maximize the value of their meals, Anyday Kitchen has implemented just-in-time (JIT), focuses on quality control and has created a culture of continuous improvement. This has enabled them to achieve less than 1 % food waste.

Figure 5: An example of Anyday Kitchen's various cuisine brands
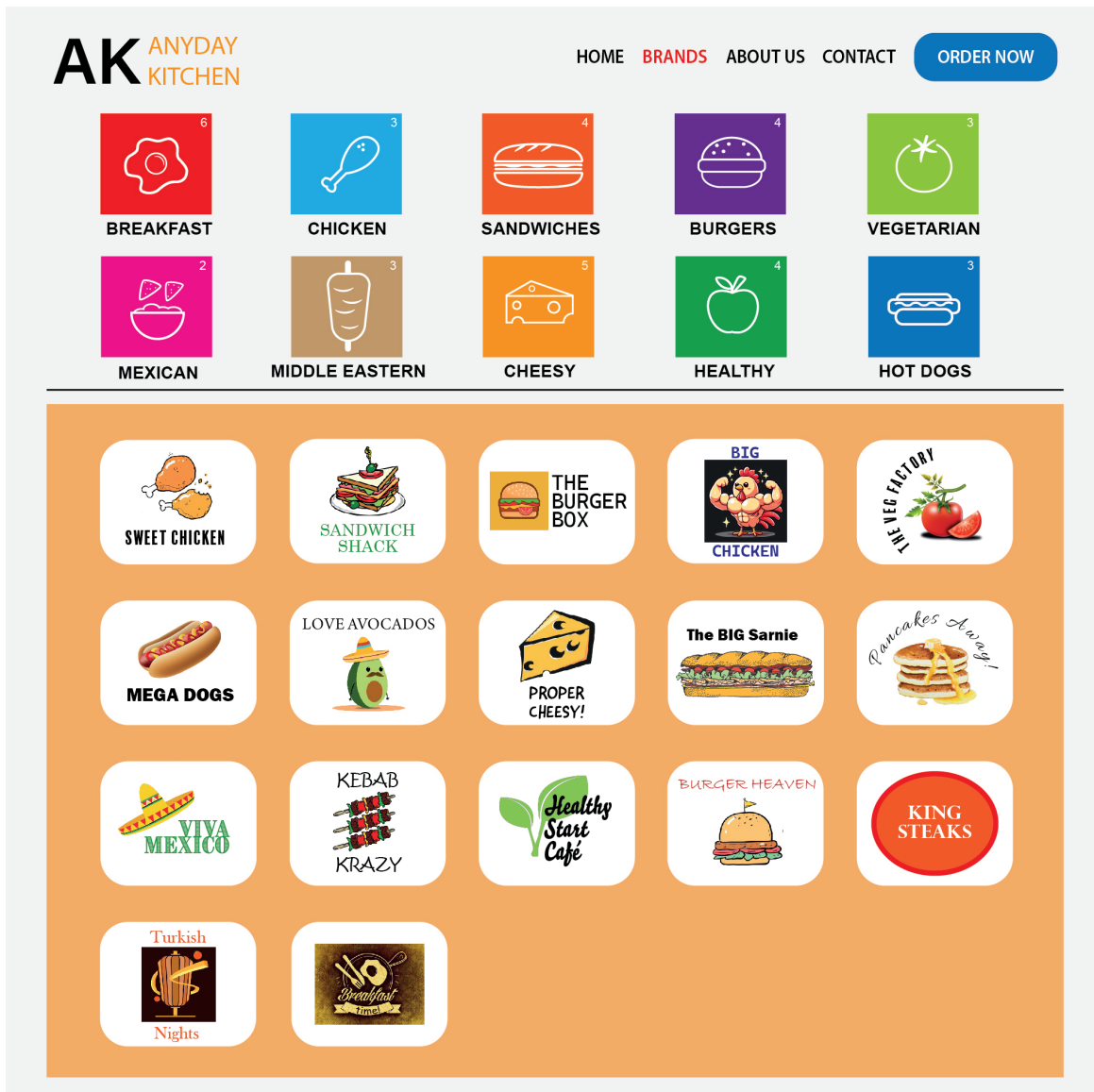
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(Question 3 continued)

(a)   List **two** implications of virtual kitchens on the place element in the 4Ps marketing mix.   [2]

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(b)   Outline how product stewardship applies to Anyday Kitchen.   [2]

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(c)   Outline **one** advantage of computer-integrated manufacturing (CIM) for Anyday Kitchen.   [2]

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(Question 3 continued)

(d) In 2024, Anyday Kitchen launched an online shopping service where customers could purchase goods such as chocolates and gifts.

Explain the advantages of this corporate strategy for Anyday Kitchen. [5]

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(Question 3 continued)

    (e)   Explain the role of just-in-time (JIT), quality control **and** KAIZEN™ in maximizing the efficiency of producing the Anyday Kitchen meals.   [9]

References:

Figure 1   With permission from Twelve Degrees Design.

Figure 2   With permission from Twelve Degrees Design.

Figure 3   With permission from AccuVein, Inc.

Figure 4   With permission from AccuVein, Inc.

Figure 5   [Mega Dogs image]: Image by Mario Alberto Sarabia from Pixabay.
[Sweet Chicken and Burger Heaven images]: Image by pencil parker from Pixabay.
[Viva Mexico image]: Image by Victoria from Pixabay.
[Love Avocados image]: Image by The_Shire_Hobbit from Pixabay.
[The Veg Factory image]: Image by Almeida from Pixabay.
[The Burger Box image]: Image by Кирилл Пашкин from Pixabay.
[Pancakes Away! image]: Image by P.Puffer from Pixabay.
[Kebab Krazy image]: Image by Raquel Candia from Pixabay.
[Big Chicken image]: Image by Szymon Jasiński from Pixabay.
[Sandwich Shack image]: Image by Clker-Free-Vector-Images from Pixabay.
[The Big Sarnie image]: Image by Ken Rogers from Pixabay.
[Breakfast Time! image]: Image by Alexa from Pixabay.
[Healthy Start Café image]: Image by OpenClipart-Vectors from Pixabay.
[Turkish Nights image]: Image by NoPixelZone from Pixabay.
[Proper Cheesy! image]: Image by cugur1978 from Pixabay.