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Design technology
Higher level
Paper 3

Wednesday 9 November 2022 (morning)

Candidate session number

1 hour 30 minutes

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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.

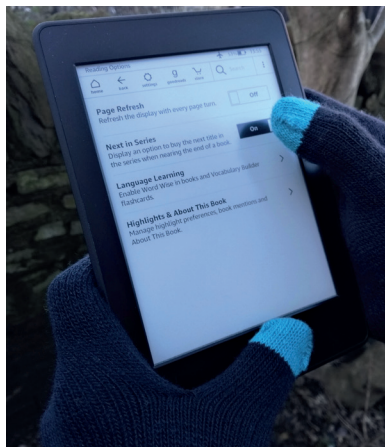
- 1. Standard hand gloves do not work on touchscreens.

Swipegloves have developed gloves that allow users to interact with their touchscreens without having to take their gloves off, see **Figure 1**. Swipegloves introduced touchscreen gloves in 2022 with a retail price of US\$9.99. **Figure 2** shows a user interacting with a touchscreen.

Figure 1: Example of touchscreen gloves



Figure 2: Swipegloves can be used with touchscreens



- (a) List **two** possible user-centred design (UCD) strategies that might have been used in the design and development of the Swipegloves.

[2]

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(Question 1 continued)

- (b) Outline how geographical market sectors can be used to determine where Swipegloves touchscreen gloves could be sold. [2]

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- (c) Outline the pricing strategy Swipegloves used for their first pair of gloves. [2]

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- (d) Explain how Swipegloves would have used the market research strategy of environmental scanning to identify this design opportunity. [4]

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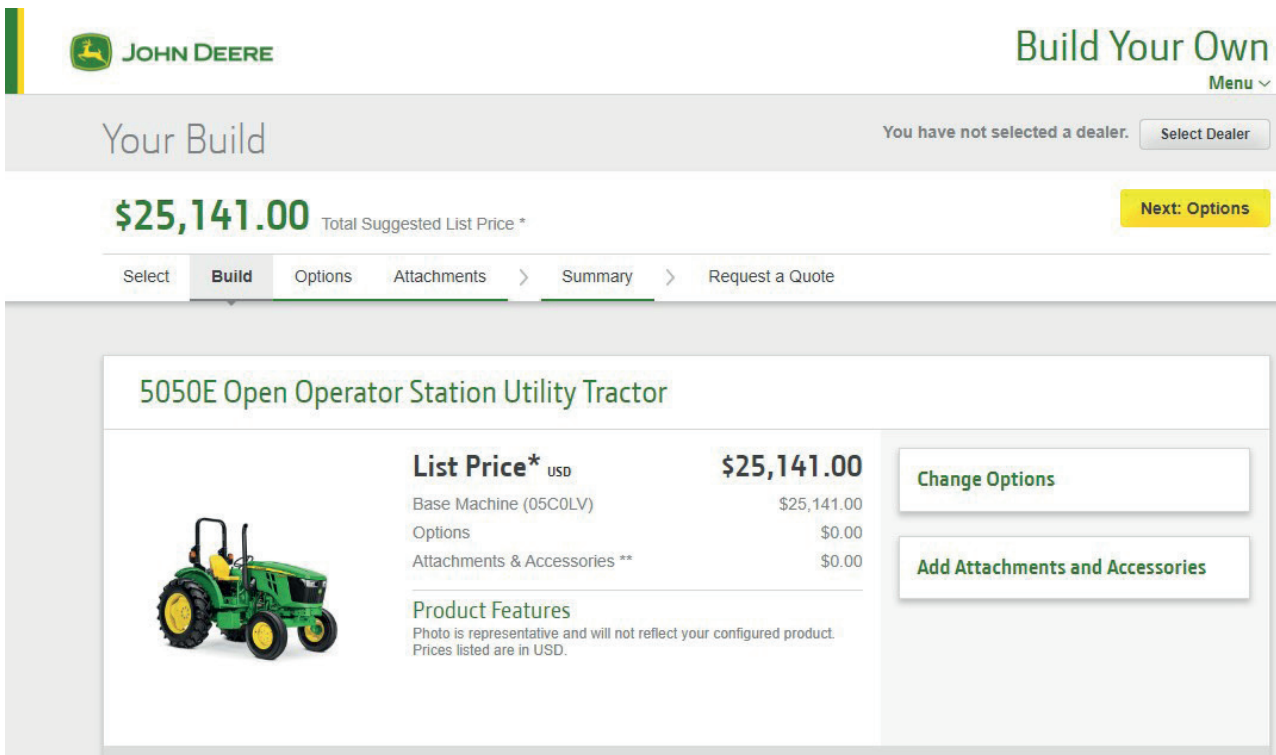


- 2. John Deere manufactures equipment used in agriculture, construction and forestry. To improve productivity and customer satisfaction, the company updated its quality management, implemented lean production and outsourced all machinery operations to third party suppliers.

John Deere have also introduced the “Build Your Own” option, where customers can select a supplier, customize their equipment and calculate the total price before placing their order. Customers have said that this option provides good value for money.

Figure 3 and Figure 4 show the John Deere website and user interface which shows how a tractor can be customized.

Figure 3: “Build Your Own” utility tractor page



[Image Provided as Courtesy of John Deere]

(This question continues on the following page)



(Question 2 continued)

Figure 4: "Build Your Own" summary page showing the total price with customized attachments and accessories

The screenshot displays the John Deere 'Build Your Own' summary page. At the top, the John Deere logo and 'Build Your Own' text are visible. The main heading is 'Your Summary'. A large green price tag shows '\$25,243.64 Total Suggested List Price *'. Navigation buttons include 'Previous: Attachments' and 'Next: Request a Quote'. A breadcrumb trail shows 'Select > Build > Options > Attachments > Summary > Request a Quote'. Action buttons for 'Print', 'Calculate Payments', and 'Add Another Product' are present. The product is identified as '5050E Open Operator Station Utility Tractor'. A price breakdown table shows: Base Machine (\$25,141.00), Attachments & Accessories (\$102.64), and Options (\$0.00), totaling a List Price of \$25,243.64. A detailed table of attachments is shown below:

Dealer-Installed Attachments	Quantity	Price
ATTACHMENTS FOR FIELD CONVERSION		
Horn Kit For use on 5045E, 5055E, 5065E, and 5075E tractors Compatible with OOS tractors only	SJ288924 1 x \$52.80 ea	\$52.80
Rear View Mirror Mounting Kit OOS Requires AL80127 and/or AL80126. OOS Only. Kit contains support plates and hardware for one rear view mirror. Mirror not included.	RE244177 1 x \$49.84 ea	\$49.84

[Image Provided as Courtesy of John Deere]

- (a) List **two** of the 7 wastes of lean production that companies such as John Deere aim to eliminate.

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12EP05

Turn over

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

Answers written on this page
will not be marked.



(Question 2 continued)

- (b) Outline how John Deere's "Build Your Own" option provides customers with value for money. [2]

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- (c) Outline how John Deere's "Build Your Own" is an example of a just in time (JIT) production strategy. [2]

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- (d) Explain how John Deere can use quality assurance to ensure clients receive what they ordered. [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. To encourage sustainable consumption, the company, Sprintkind use only natural and recycled materials in the production of its shoes, socks and clothing.

Sprintkind products are manufactured from materials such as superfine wool, sugarcane, and fibres from Forest Stewardship Council (FSC) certified trees. This results in lightweight, odour free and temperature-regulating products. These materials are available in a limited range of natural colours, see **Figure 5**.

To meet their long-term goal of becoming a carbon-neutral company, Sprintkind began to use a Carbon Count label. **Figure 6** shows the Carbon Count label used to inform consumers of the low carbon footprint. Furthermore, as part of its sustainability objectives, Sprintkind also donates their shoes to charity.

Figure 5: Sprintkind’s tree fibre, superfine wool and sugarcane shoes



(This question continues on the following page)



(Question 3 continued)

Figure 6: Sprintkind's shoe Carbon Count label



(a) List **two** ways that Sprintkind demonstrates corporate social responsibility. [2]

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(Question 3 continued)

(b) Outline how Sprintkind’s sustainability reporting enhances its green credentials. [2]

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(c) Outline how Sprintkind products address Datschefski’s cyclic principle of sustainable design. [2]

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(d) Explain how the Carbon Count label on Sprintkind products can support sustainable consumption. [5]

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References:

Figure 3 Image Provided as Courtesy of John Deere.

Figure 4 Image Provided as Courtesy of John Deere.

Figure 5 Mens Shoes. Image by Marco Verch. www.flickr.com/photos/30478819@N08/50395873783. Under copyright and licensed under the Attribution 2.0 Generic license. <https://creativecommons.org/licenses/by/2.0/>. (Image cropped and recoloured).

Figure 6 Mens Shoes. Image by Marco Verch. www.flickr.com/photos/30478819@N08/50395873783. Under copyright and licensed under the Attribution 2.0 Generic license. <https://creativecommons.org/licenses/by/2.0/>. (Image cropped and recoloured).

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