

系所組別： 工業設計學系乙組

考試科目： 人體工學

考試日期：0219，節次：2

※ 考生請注意：本試題 可 不可 使用計算機

一、解釋名辭(32%; 請詳加解釋，若僅翻譯則每題只給一分；解釋正確，但不夠詳盡，給二分；解釋正確，且夠詳盡，給三分；解釋正確，且夠詳盡，並甚為精彩或有獨到見解者，給四分。)

1. Link Analysis

2. Product Semantics

3. Movement Time

4. Deadspace

5. Popliteal Height, Sitting

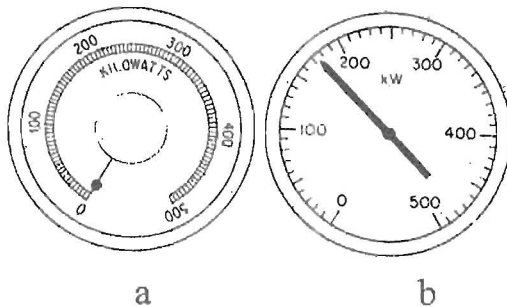
6. Seat Reference Point

7. NIOSH in USA

8. Isometric Strength

二、試以擴增實境(Augment Reality)，設計一套室內裝潢系統，請問這個系統會有哪些構件，及其如何使用，試詳述之(可以繪圖說明系統運作)。(15%)

三、以下兩個設計，各有甚麼缺點？並述明理由。(8%)



四、假設現今要進行觸控筆之長度及直徑對人使用之影響研究，請問你/妳將如何考慮，如何進行實驗？(5%) 並請詳加說明本研究之自變項(Independent Variables)(3%)，應變項(Dependent Variables)(3%)和您如何進行變項控制(4%)。(本題共 15%)

五、請就所附文章“Effects of Color Sample Display and Color Sample Grouping on Screen Layout Usability for Customized Product Color Selection,”之「Mass customization in product color」一節，詳述該節所言及之重點。(限中文作答，至少 600 字) 20%

六、讀過「Mass customization in product color」一節，您有甚麼看法？對您有什麼啟發？10%

(背面仍有題目,請繼續作答)

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Mass customization in product color

Internet-based mass customization has become an important consumer activity in many industries. Today's consumer prefers to choose products from a wide variety of styles that combine different colors and forms. In the automobile industry, DaimlerChrysler Mercedes-Benz's Smart car is a well-known example of mass customization in color choice. In the mobile phone industry, there are many choices of color for covers (e.g., Sony Ericsson, www.styleupcover.com: Design Your Own Gadgets). In the sports shoe industry, consumers can select colors, fit and materials (e.g., Nike, www.nikeid.com).

Modular product design, which maximizes product variety by offering each product as a set of independently reusable and interchangeable modules, is considered a key enabler for efficient mass customization, and it often increases the manufacturers' strategic flexibility in a fast-paced market environment (Starr, 1965). For example, modularization of an automobile allows buyers to customize features such as exterior color, engine power, interior color and safety devices (Salvador, Forza, & Rungtusanatham, 2002). Modularity increases product variety and strategic flexibility while reducing development time, development costs and managerial complexity (Muffatto & Rovda, 2000).

Color correlates highly with consumer impressions of a product (Yun, Han, Hong, & Kim, 2003). Different color combinations can achieve different visual effects and create a more pleasing and stylish product image (Ma, Chen, & Wu, 2007). Modularity in color choice has become a common strategy in the struggle to meet individual consumer preferences at low cost and low risk (Watanabe & Ane, 2004). Color customization is now available for many products, including furniture, sports shoes, cars, motorcycles, digital cameras and mobile phones. Some vendors attempt to assist through virtual images, and the role of color in screen layouts for customization has accordingly become an important topic of research in industrial design. Color is one of the two most distracting attributes of objects on a screen (Constantine & Lockwood, 1999), but, managed skillfully, it contributes substantially to the quality and usability of a screen layout (Tufte, 1989). Several studies show the important effects of color in visual search and human information processing (Fukuzumi, Yamazaki, Kamijo, & Hayashi, 1998; Post & Reinhart, 1997; Liu, Hwang, & Wang, 1999; Bodrogi, 2003; Lin 2005). The use of color for screen elements such as menus, buttons and links are explored for web-based interfaces in several studies (Ozok & Salvendy, 2004; Pearson & van Schaik, 2003; Schaik & Ling, 2003), and the recognition of color in human-computer interfaces has been researched (Chalmers, 2003). Few studies have discussed the effects of screen layout on product color combination tasks. Product customization with optional color selection is usually applied in the 3C products (computers, communication and consumer electronics products) such as notebooks, mobile phones, digital cameras, and digital clocks. Chen, Lee, Wu, and Su (2007) investigated the effect of color display for customized color combination but did not discuss color display in depth or the relationship between color display and color grouping. The range of colors – and hence of combinations – can be intimidatingly large and needs to be grouped for search and selection ease. This study aims to investigate this issue. (摘自Fong-Gong Wu*, Cheih-Ying Chen, Ying-Jye Lee, Rain Chen, JAN 2010, "Effects of Color Sample Display and Color Sample Grouping on Screen Layout Usability for Customized Product Color Selection," *Computers in Human Behavior* 26(1), pp. 51-60, (SSCI))